DEPARTMENT OF COMMERCE AND RELATED AGENCIES APPROPRIATIONS FOR 1959

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

EIGHTY-FIFTH CONGRESS

SECOND SESSION

JOINT UTILIZATION OF FEDERAL AIRWAYS BY MILITARY AND CIVILIAN AIRCRAFT

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DEPOSITED BY THE
UNITED STATES OF AMERICA

DEPARTMENT OF COMMERCE AND RELATED AGENCIES APPROPRIATIONS FOR 1959

JOINT UTILIZATION OF FEDERAL AIRWAYS BY MILITARY AND CIVILIAN AIRCRAFT

THURSDAY, APRIL 24, 1958.

Mr. PRESTON. The committee will come to order.

PURPOSE OF THE HEARINGS

Recent collisions between military and commercial aircraft prompt this committee to hold this hearing with the representatives of major segments of aviation present. We hope to determine what deficiencies exist in the operation and control of Federal airways, and whether there is adequate coordination between military operations on the one hand, and Civil Aeronautics Authority control and Civil Aeronautics Board regulation, on the other.

Therefore the prime purpose of this meeting is not to fix responsibility for the recent collision in the Las Vegas area, but rather to bring to light known facts about this and similar accidents which may help Congress and the agencies involved to improve existing systems for controlling aircraft and assuring safety.

This hearing is particularly appropriate at this time because the committee is considering financial requirements for the next fiscal year for the Civil Aeronautics Authority, Civil Aeronautics Board, and the Airways Modernization Board.

I will request the staff to make a list of all those present in the committee room and those outside who wish to be present or appear, and we will insert that list in the record at this point.

(The list is as follows:)

WITNESSES

CIVIL AERONAUTICS ADMINISTRATION

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DEPARTMENT OF THE AIR FORCE

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DAGGET H. HOWARD, ASSISTANT GENERAL COUNSEL
MAJ. GEN. MAURICE A. PRESTON, DIRECTOR OF OPERATIONS, HEADQUARTERS USAF
COL. LAWRENCE S. LIGHTNER, OFFICE OF DIRECTOR OF OPERATIONS, HEADQUARTERS USAF
COL. CHARLES B. WINKLE, OFFICE OF INSPECTOR GENERAL, HEADQUARTERS USAF
COL. ALBERT L. HALEY, OFFICE OF DIRECTOR OF PLANS, HEADQUARTERS USAF
LT. COL. CHARLES H. WILLIAMS, OFFICE OF DIRECTOR OF PLANS, HEADQUARTERS USAF
MAJ. R. W. MEADE, OFFICE OF SECRETARY OF THE AIR FORCE, LEGISLATIVE LIAISON
CAPT. ARTHUR KEYES, NELLIS AIR FORCE BASE

AIRWAYS MODERNIZATION BOARD

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CAPT. L. S. PRICE, OFFICE OF CHIEF OF NAVAL OPERATIONS
COMDR. E. E. RAINS, LEGISLATIVE LIAISON

AIR LINE PILOTS ASSOCIATION, INTERNATIONAL

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TOM BASNIGHT, ENGINEERING AND AIR SAFETY REPRESENTATIVE

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GEN. MILTON W. ARNOLD, PRESIDENT, VICE PRESIDENT, OPERATIONS
CAPT. WALTER A. JENSEN, SPECIAL ASSISTANT TO DIRECTOR
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LEO SEYBOLD, VICE PRESIDENT, FEDERAL AFFAIRS

NATIONAL BUSINESS AIRCRAFT ASSOCIATION

WILLIAM K. LAWTON, EXECUTIVE SECRETARY

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

CYRIL B. THOMPSON

Mr. PRESTON. The principal witnesses to be heard today, while not excluding others, will be, first, the CAB, then the CAA, then the Air Force, and then the Airways Modernization Board. Further witnesses will be called if time will permit and if the circumstances warrant after the previously named witnesses have been heard.

INFORMATION AVAILABLE ON ACCIDENT AT LAS VEGAS

We have with us this morning the Chairman of the Civil Aeronautics Board, Mr. Durfee. Mr. Durfee, the committee would first like to have made known to it what information is available with reference to the recent accident at Las Vegas. Do you wish to comment on this, or do you have someone with you to comment on the accident?

Mr. DURFEE. Mr. Chairman, by way of preface to the person who will comment on the facts of the accident, I will merely say the Civil Aeronautics Board has the responsibility delegated to it by the Congress to conduct investigations of aircraft collisions, including the acts in question now being conducted under the direction of the Civil Aeronautics Board at Las Vegas in cooperation with other agencies of the Government and the aircraft carriers, airline pilots, and others.

The person under our staff delegation who is directly responsible to the Board for the conduct of safety investigations is the Director of the Bureau of Safety for the Board, Mr. Oscar Bakke. Accompanying me also is Mr. Ross Newman, Assistant General Counsel in charge of legal aspects of rulemaking in the safety field. And Mr. Robert Kunsig, my executive assistant.

For the purpose of giving this committee the most current and complete facts that we can give the committee as to what happened in this accident last Monday at Las Vegas, I would like to present, Mr. Chairman, Mr. Oscar Bakke, our director of safety, who just returned this morning, I would say after being up in an airplane all night, from Las Vegas, the scene of the accident.

Insofar as the Board is concerned, we consider him the most competent witness that we have to present at this time as to the facts as far as they are known to the Civil Aeronautics Board as they pertain to this accident wherein the investigation which has been in progress since a matter of an hour or so after it happened.

Mr. PRESTON. Mr. Bakke, we will be glad to hear from you at this time and give the committee all of the information that you have relative to this accident at Las Vegas.

STATEMENT OF MR. OSCAR BAKKE, DIRECTOR OF SAFETY, CIVIL AERONAUTICS BOARD

Mr. BAKKE. Very well, sir. The committee will appreciate, of course, that the investigation is still in progress and, as a matter of fact, during the period that I spent at Las Vegas, so many aspects of the investigation were underway and were moving with such rapidity it was impossible to bring together in a written record all of the facts yet disclosed.

I do, however, have a somewhat generalized story that I believe would be specific enough for your purposes.

I should like to state that the Board was alerted to the accident within a matter of minutes after it occurred and immediately dispatched eight of our investigators from the Washington office, who arrived in Las Vegas during the afternoon of the 21st, the day on which the accident occurred, and immediately began to organize the investigators, both those from the Board itself and from other interested persons having specialized skills and knowledge upon which the investigation would be dependent.

These are the persons who included representatives of the Civil Aeronautics Administration, the Air Force, the operator—United Air Lines—the manufacturer, and other such persons delegated to the Board in the Las Vegas area.

They were immediately constituted into four groups—investigatory groups—a structure group, a powerplant group, an operations group, and a witness group.

These were headed by a member of the Bureau of Safety staff. Other organizations, those to whom I referred earlier, contributed persons who would assist the Board in this task. I omitted to refer to the Airline Pilots Association, which is also amply represented by its personnel at the scene.

The investigation was hampered at least the first day by the unusually high temperatures and high winds in the Las Vegas area. The temperatures were well over 100° and the very high winds caused unusual sandstorms and duststorms which made difficult the location of some of the parts during the first day, and it also limited the ability of the helicopters which were made available to us by the Nellis Air Force Base commander.

However, I believe that the most significant information which was found to have been lacking during the first 2 days of the investigation was finally uncovered yesterday morning, and I will go into that in just a moment.

Our preliminary investigation reveals that a United Airlines DC–7 departed Los Angeles on a nonstop flight, Los Angeles to Denver, leaving the ground at Los Angeles at 0737, the morning of the 21st.

The flight was on an instrument-flight-rules flight plan which had been filed along Victor 15–10 to Denver to cruise at 21,000 feet. An appropriate clearance was issued. The aircraft reported Daggett at 0811, 11 minutes after 8 o'clock in the morning, and climbed to its cruising altitude, and thereafter reported reaching 21,000 feet—excuse me, reported at 21,000 feet over Daggett at 0811, and continued its cruise at 21,000 feet toward Las Vegas, estimating to arrive over the Omni Station at Las Vegas at 0831, 20 minutes later.

At approximately that time, 0831, or some minutes prior to that time, an Air Force F–100F, with an instructor pilot in the rear seat, presumably under the hood—excuse me, the student pilot in the rear seat, presumably under the hood and an instructor pilot forward, had been maneuvering the F–100F in the vicinity of Las Vegas going through certain maneuvers which are a part of a training curriculum afforded to rated Air Force personnel at the Nellis Air Force Base.

At the conclusion of these training maneuvers an operation known as a jet penetration from its operating altitude of 28,000 feet was to have been commenced. At this time the pilot of the F–100F contacted a VFR control unit at Nellis indicating that it was to depart 28,000 feet in one of the several teardrop jet penetration procedures, which used as its basic navigation aid a commercial broadcasting station, KRAM, located in the southern part of the city of Las Vegas.

The aircraft was cleared for this jet penetration procedure by the VFR control unit at Nellis. The descent was started, it is presumed in accordance with the procedure, that the descent was initiated on a heading of 170°, which would have brought the aircraft after a period of somewhere between 30 and 45 seconds off the airway. The station KRAM is located within the limits of the airway on which the United Airlines DC–7 was flying.

One hundred and seventy degrees descent path of the F–100F would have carried the F–100F off the airway at approximately 45° up to the bearing of the airway itself.

The descent was to have continued until an altitude not lower than 14,000 feet and a gradual turn was to begin to a heading which would return the F–100F to KRAM on a bearing which, after passing KRAM, would permit the aircraft to pass over the Nellis Air Force Base at a designated minimum altitude.

However, during this descent the F–100F collided with the DC–7. Here I must make a brief parenthesis.

Communications from both aircraft were heard, either before or immediately after the collision. In the case of the DC–7, it is clear that the communication which was received from that aircraft was received immediately after the collision, because the United aircraft stated—the sense of his comment was "Midair collision over Las Vegas. May Day."

This was in brief the only communication received from the DC–7.

A communication was received from the F–100F. Some ambiguity exists at the moment as to whether any of that communication was received prior to the collision. It is clear that the F–100F requested permission to begin its jet penetration. It is also clear that this permission was granted.

It is safely presumed that the descent was begun in accordance with the established procedure. During that descent a communication was received from the aircraft which was begun with the words "May Day." Thereafter there is some doubt as to whether the words that followed indicated "flameout" or whether it indicated "bail out." There is also some doubt as to whether that particular expression was transmitted immediately prior to the collision or immediately after the collision.

If it was transmitted immediately prior to the collision, there would be some sense derived from that fact, indicating engine failure, a

flameout, prior to collision, which could very well have resulted in the departure from the jet penetration procedure.

The communications on the case and the persons whose testimony will be necessary to eliminate this ambiguity are being examined at the moment and we hope that in a matter of days this remaining ambiguity will be eliminated.

Mr. PRESTON. At that point, Mr. Bakke, why have not the communications tapes been already examined?

Mr. BAKKE. Well, sir, the Operations Committee which has the responsibility so far as this particular investigation is concerned for the examination of matters of items like this has been very busily engaged in the last 2 days in the collection of all of the information which is needed for the investigation.

The first thing to do is to be certain that all of the information—basic sources of information—are collected. The tape has been collected. It is in the possession of the investigators.

However, the Operations Committee, I believe, would be remiss if it concentrated particularly on single items of its investigation and left uncollected the necessary information which must also be subject to their investigation.

I don't consider this delay, sir, of particular significance. Quite to the contrary, my impression at the scene of the investigation was that they had collected necessary material such as this with unusual rapidity. I believe all who are in the Las Vegas area would concur that the investigation is proceeding, so far as time is concerned, in excellent fashion.

The wreckage of the DC–7 was located at a point approximately 5 miles southwest of the Las Vegas Omni Station. The wreckage of the F–100F was located approximately 5 miles south-southwest of the wreckage of the DC–7.

The preliminary investigation revealed that there was a portion of the right wing of each of the aircraft missing from the main areas of wreckage of both.

Accordingly, during the first day considerable search activity was undertaken to locate these missing pieces. They were found shortly after dawn yesterday by a helicopter team which participated in the search, the helicopter team having been furnished by the Nellis Air Force Base.

Several of the investigators, including myself, visited the location of these parts on a knoll approximately half way between the two main areas of the wreckage yesterday morning.

A preliminary investigation of these parts, plus what knowledge we had of the main area of the wreckage, indicates rather clearly what the relative attitudes of the aircraft were at the time of impact. The F–100F with respect to the DC–7 was in an unusually steep, angular bank. Our current information would indicate that this was a right bank. The bank must have been rather close to about 80°, which would have him almost standing on his ear, so to speak. This is a very steep bank.

There is, however, some reason to expect that the bank was in the opposite direction. This matter of ambiguity we hope to resolve within the next day or two.

The flight path of the F–100F was across the nose of the DC–7, and the resultant directions of both aircraft resulted in the right wing of

the F–100F passing through the right wing of the DC–7 approximately at 45° across the wing spar, the main spar, of the DC–7, at a point beginning approximately 10 feet from the right wing tip of the DC–7, and extending rearward at approximately 45° to a point approximately 5 feet from the wing tip of the DC–7 at its trailing edge.

This part of the DC–7 wing left the aircraft in flight simultaneously with the loss by the F–100F of a portion of its right wing approximately 8 feet in length, both pieces of which fell free of the aircraft to the ground at the points where they were located in relatively close proximity.

The damage to the DC–7 wing shows that the shearing action occurred along a line which was almost perpendicular vertically to the main spar of the wing. This indicates that the angle of bank of the aircraft must have been something closely approximating 80° when one takes into account the dihedral of the wings of the DC–7.

I might state in passing that just to give some indication of what current speculation might be with respect to the goings on of the F–100F at the moment, without, of course, wishing to suggest any causative factor, but merely to indicate a tiny thing which is necessary in the prosecution of the investigation—were there a flame-out immediately prior to impact, to collision, it would be reasonable to suppose that the pilot of the F–100F would make a rather substantial bank in turning back toward Nellis in order to execute an emergency landing. It would not be unreasonable therefore to suppose that somewhere slightly southwest of the omnirange station that the Air Force pilot might—a flame-out having occurred—have left the jet penetration procedure by making a steep right turn, and in the second or so thereafter, being preoccupied with the normal porcedures for an aerial descent, have collided with the DC–7.

This can be fairly rationalized on the basis of our present incomplete information.

On the other hand, it can also be—at least in large part—rationalized were we to have assumed that the F–100F were in fact in the jet penetration procedure, the student pilot under the hood flying the aircraft, and suddenly the DC–7 became visible to the instructor pilot in front, whereupon he turned very sharply to the left to avoid collision, and upon reaching an angle of bank somewhere perhaps even beyond the 90°, then collided with the DC–7.

In the former case, the fuselage of the F–100F would have been slightly above the right wing of the DC–7, and the right wing of the F–100F sheared—that is, the low wing, the right wing being low—sheared the outer wing section of the DC–7.

In the latter case, the turn having been made to the left, the fuselage of the F–100F would have been slightly below the right wing of the DC–7 with the high wing, the right wing, shearing off the outer wing section of the DC–7.

I mention these two merely to indicate and give the committee some feel for the ambiguity which still remains concerning this aspect of our investigation.

All of the wreckage which is material to this investigation, either has already been or is being collected from the scene of the wreckage and brought to an impound area within Nellis Air Force Base which is properly fenced off, subject to security, and within which the parts principally involved will be reconstructed in order to determine with

more precision their exact relative attitudes immediately prior to and at the time of impact.

We believe that with what we now have available to us, this can be done with reasonable precision, certainly more so than I have been able to indicate this morning.

The clock of the DC–7 was found stopped by an impact at approximately 8:34 and a half. The duration of the fall is computed to be approximately 3.6 minutes from the moment of impact, which would make the collision to have occurred at between 8:31 and 8:32, which is approximately the time that the DC–7 pilot had estimated arrival over the Las Vegas omnistation.

The point of collision is tentatively set at a point approximately 5 or possibly 6 miles southwest of Omnistation.

Sir, that is a brief indication of where we are to date. I might say that in all likelihood a public hearing will be ordered, an investigation of this accident. Relying upon the progress of our investigation to date and our past experience in matters of this sort, I would presume that all of the examination of the wreckage, the parts of the two aircraft, the operational procedures which are pertinent to this investigation, will have been completed within the next 3 or 4 weeks, and that at the end of that part of our investigation it will be appropriate to hold such a public hearing.

CLEARANCE UNDER WHICH MILITARY AIRCRAFT WAS OPERATING

Mr. PRESTON. Mr. Bakke, what type of clearance was the military aircraft operating under?

Mr. BAKKE. The military aircraft was operating under a local clearance issued by the local unit at Nellis Air Force Base. No aircraft control clearance issued by the Civil Aeronautics Administration or the Air Traffic Control Agency of the Civil Aeronautics Administration had been issued to this aircraft.

The particular clearance to descend was issued by the VFR control unit at Nellis, which is a unit independent of both the tower and of the CAA Air Traffic Control Agency.

Mr. PRESTON. Now, is it normal procedure for military aircraft to take off on an area clearance without reporting that type of clearance to the CAA tower?

Mr. BAKKE. Yes, sir; that is quite normal.

Mr. PRESTON. It is generally practiced throughout the Nation and throughout the areas where military aircraft are located?

Mr. BAKKE. I would say so, sir.

Mr. PRESTON. If this is the general practice, then the civil aviation people at no time know of the whereabouts of military aircraft in that area, do they?

Mr. BAKKE. Sir, I would not say at no time. Obviously when instrument weather conditions prevail, during all of these conditions when operation is intended within controlled air space, military aircraft—as with all other aircraft—are required to file flight plans with the CAA.

Your statement, however, would be entirely correct with respect to VFR operations.

Mr. PRESTON. The unit that gave the military aircraft clearance to make a penetration is called what?

Mr. BAKKE. I may be doing injustice to the title, sir, but my recollection is VFR Control Unit.

Mr. PRESTON. That is a separate unit as distinguished from the military control tower?

Mr. BAKKE. Yes, sir.

Mr. PRESTON. Now, if the jet plane—because of some mechanical failure—asked for a clearance for emergency landing, they would have obtained that from the military control tower. Is that true?

Mr. BAKKE. Yes, sir, assuming, for instance, that the emergency landing were intended to be made at the Nellis Air Force Base. This obviously then would be true; yes.

Mr. PRESTON. There would have been no clearance with the CAA?

Mr. BAKKE. Not necessarily, no, sir.

Mr. PRESTON. If a normal instrument approach landing had been requested, that would have had to be cleared with the CAA control tower. Is that true?

Mr. BAKKE. If a normal instrument approach——

Mr. PRESTON. Instrument approach.

Mr. BAKKE. Again I would have to make the same reservation I did with respect to an earlier question. If the operation were an IFR operation, I would have construed the approach which was being made at the time or prior to this accident to have been a normal instrument approach. It was simulated, of course. It was not under actual instrument conditions, but it was a normal approach in the sense that the procedures which were then in effect for Nellis, which had been authorized—that is, cleared with—appropriate authority in the Civil Aeronautics Administration, were being followed. It was normal in that sense. But it was nevertheless a VFR operation, the effect of which would be that the responsibility remained upon the pilot in command of the aircraft to see and to avoid other aircraft.

Mr. PRESTON. Mr. Bakke, in your capacity, are you a competent witness to testify as to the requirements of an aircraft in cases of making an instrument approach or making a penetration or in making an emergency landing? Or would you defer to others present who have more jurisdiction over that subject?

Mr. BAKKE. Sir, if you are talking about the procedures in general, I would certainly wish to defer both to the Air Force and to the Civil Aeronautics Administration. My testimony before you this morning should be limited only to that information which I have received in the course of this investigation and to the extent that it is pertinent to this investigation.

Mr. PRESTON. Very well. We have no desire to ask you questions which would be improper or inappropriate.

POSSIBLE RELATIVE POSITIONS OF THE AIRCRAFT

Mr. Bakke, was the jet aircraft approaching the commercial liner from the liner's left or right?

Mr. BAKKE. From his left, sir.

Mr. PRESTON. If a flameout occurred and sudden emergency action had been taken by the instructor pilot, is it logical to assume that he would have veered to the right and away from the aircraft rather than to the left and into the wing?

Mr. BAKKE. Sir, I would find it rather difficult to relate the two actions. In any event, with or without a flameout, I would not have considered it reasonable that the pilot would have maneuvered into the way of the DC–7.

Mr. PRESTON. In order that we might understand the position of the aircraft, let me ask this question. If the bank were to the left instead of to the right, thereby putting the fuselage of the jet aircraft below the fuselage of the commercial liner, the jet aircraft would have made contact with the commercial liner from the trailing edge of the wing. Is that true?

Mr. BAKKE. No, sir. In either case, the impact was between the leading edges of both wings.

Mr. PRESTON. If the jet aircraft is approaching the liner from the left, how could he have made a left bank and at the same time made contact with the aircraft unless he had come completely under the commercial liner——

Mr. BAKKE. Sir, I wonder if I could explain it this way: Here we have our DC–7 proceeding along the airway. We have here our F–100F proceeding from the 28,000 at a heading of 170°.

Mr. PRESTON. Meeting the commercial liner?

Mr. BAKKE. Yes, sir, on a flight path which is intersected. Now then, shortly before—perhaps even momentarily before the collision—1 of 2 possibilities exist, that the F–100F turned to the right, passing slightly over and cutting through the right wing of the DC–7; or, conversely, that he noted the DC–7 at the very last instant, rolled the airplane to get away from him, and while he was is a steep bank slightly below, cut through the right wing.

Those are the two possibilities which we are exploring at the moment, sir.

Mr. PRESTON. You have mentioned the possibility, Mr. Bakke, of a flameout. That question will be explored further when the military controller is examined.

Mr. BAKKE. And of course when the teardown of the powerplant of the F–100F is accomplished, the examination of certain communications tapes, and so on.

Mr. PRESTON. If a flameout had occurred, would it have been the normal procedure of the pilot to have immediately requested emergency landing permission?

Mr. BAKKE. In due course, sir. If by "immediately" you mean in preference to any other procedure, here again I would suggest that it might be appropriate for you to speak with folk who are far more expert on jet aircraft than I am.

So far as our investigation is concerned, I might say that the taking of other action such as the turning of the aircraft toward Nellis—that is, turning the aircraft back to an airport at which an emergency landing could be made—is not an unreasonable maneuver for him to have taken prior to doing anything else, including communicating.

Mr. PRESTON. It is not the purpose of the committee to go into extreme details about the actual accident. The well-known and established facts were what we were principally concerned with this morning. It is certainly not our desire to prejudge this accident.

At this point I shall ask the members of the committee if they have any questions of Mr. Bakke?

Mr. Thomas?

Mr. THOMAS. Mr. Chairman, I think your judgment is good. Fixing the liability is not the purpose of this committee. As you well stated in your opening statement, the purpose of this committee is the handling of the allocation of funds for three very important agencies which are involved, and you have other gentlemen here who will take a look at the military.

The thing that I personally want to know is: Somebody, of course, made a mistake. You either had a human failure or you had a mechanical failure. In this particular area there wasn't maybe too much justification for either to happen.

NEEDS TO PREVENT SUCH ACCIDENTS

The question is, Mr. Chairman: What should be done to prevent this again? Is it more dollars, more manpower, more CAA, CAB, the Air Force, the Army, the Navy, who is going to occupy the air in the future? What is the answer? Should every plane that takes off the ground be controlled from the minute it takes off until it sets down?

Should it be that you should have twice as much equipment, twice as much manpower, twice as much regulation in those areas immediately over and contiguous to an Air Force base?

That's the purpose. Let's do a little talking right quick on that and get down to cases right quick.

Mr. DURFEE. Congressman Thomas, I understand from my conversation principally with our own people—CAA—they believe that the ultimate objective in the control of the airspace as we move into the jet age—the ultimate objective of the Board, of the Administrator, and the Defense Establishment, is to provide some kind of common system of positive ground control which will provide an adequate system of radar communications, navigation, both on the ground and in the air, which will assure positive control from the ground, and will in turn assure positive separation between all aircraft in the appropriate airspace.

I think that is the ultimate objective. I think we are working toward the tools that are required—or perhaps as you have suggested, or in the words of Mr. Bakke, men, money, and machines, the hardware that is needed, the machines, to operate this system.

As to whether the funds presently appropriated in the past year and the fiscal year coming up are sufficient to give the Administrator the hardware or the means which we can absorb into the system within the current year or within the projected plans which he has, and which Mr. Quesada of the Airways Modernization Board—which is now planning ahead as to what money is needed for fiscal 1959——

Mr. THOMAS. Mr. Chairman, don't let's duck and dodge now. Let's cut out all the ifs. It is not sufficient money, manpower, or hardware. How much of each is going to be needed or a rough guess. Let's don't wrap it up in ifs. If we had a sufficiency of all three of them, this one wouldn't have happened, would it? And this one over Fort Worth about 3 weeks ago wouldn't have happened, would it?

Mr. DURFEE. I would add one thing to that, Congressman Thomas, and that is the responsibility primarily of this Board—that is, I do think that the Board recognizes that we need—current with this development—mechanical operations. We need a corresponding deve!-

opment in the rulemaking powers of the Board and in the delegation of authority to the Administrator——

Mr. THOMAS. Just tell us what is needed. We don't ask how much it is going to cost. Just tell us what is needed. We will figure that out later.

These things are happening too often, too frequently, and you can't measure this in terms of dollars and cents. We know that you don't have the tools you need. We know you don't have the men, because if you had had them, I don't think this thing would have happened.

So you are on the right track, I think, so go on and be a little more definite. That is all I am trying to say.

Mr. DURFEE. I would say specifically, as to the Civil Aeronautics Board itself, we will be coming before your committee next week with our budget——

Mr. THOMAS. You are an expert in this field now. Let's talk generally. This is one place you can say what you want to.

Mr. DURFEE. Our own budget, I think, contemplates for ourselves a conservative estimate of what the Board will need during fiscal 1959 to accomplish the objectives that we have to accomplish within the safety field, both in investigation and regulation. That, I think, we can explain in detail next week before this committee, why we need it.

As to the requirements of the Administrator, to implement this program, the requirements the Air Force may have, I wouldn't generalize any further, Mr. Congressman, except I think we need more money, more men, more machines.

Mr. THOMAS. If you had that, would this not have occurred?

Mr. DURFEE. I think it is conceivable that had all parties been about 3 years ahead of where they are now, I would hazard a guess this accident might have been averted.

Mr. THOMAS. No further questions, Mr. Chairman. It sounds like a pretty good summation of it.

APPROPRIATIONS FOR SAFETY FUNCTIONS

Mr. ROONEY. In the past dozen years has the Congress ever made a cut in the appropriations with regard to the safety functions of the Civil Aeronautics Board?

Mr. DURFEE. I believe last year our appropriations—our requests for appropriations—for the Civil Aeronautics were reduced.

Mr. ROONEY. By how much?

Mr. DURFEE. Mr. Mulligan would know. As I recall, in our requested appropriations for safety, Mr. Rooney, we appeared before the House committee, and the report of this committee disallowed our entire request for safety, both in regulation and investigation.

Subsequently, in a conference between the Senate and the House, part of the appropriation that we had requested for safety was restored.

Mr. Mulligan can give you the figures.

Mr. ROONEY. What are the facts with regard to this, Mr. Mulligan?

Mr. MULLIGAN. Mr. Chairman, the estimates of the Board for 1958 included an increase for safety in the total amount of $221,700. That involved 23 additional positions.

Under the final appropriation, in the total amount of $5,489,000, compared with the total request of $5,725,000, in absorbing a total

reduction of $235,000, we did provide an increase for safety in the amount of $110,000, and 15 positions.

Mr. ROONEY. Were there any specific directions in the report with regard to a cut insofar as safety was concerned?

Mr. MULLIGAN. No, sir, there were not.

Mr. ROONEY. This is a lump-sum appropriation, is it not, for CAB?

Mr. MULLIGAN. Yes, sir.

Mr. ROONEY. You determine whether or not you are going to give all the money for safety or take away some money with regard to rate cases and so on? Isn't that right?

Mr. MULLIGAN. In the end result that is right, sir. The committee's report, as a rule, will indicate in general terms where the increase is expected to go.

Mr. ROONEY. Was there any direction in last year's report with regard to a cut in safety?

Mr. MULLIGAN. No, sir, no direction in that regard.

Mr. ROONEY. So you made the cut yourself, did you? You thought it more important to put on more people in connection with rate cases and other such things?

Mr. MULLIGAN. In the House committee's report, the amount of increase allowed by the House was identified with economic activities. There was no prohibition as far as the use of the funds for safety.

Mr. ROONEY. How much is the appropriations for the Civil Aeronautics Board presently; $5,400,000?

Mr. MULLIGAN. $5,400,000.

Mr. ROONEY. How does that compare with the appropriations in fiscal year 1953?

Mr. MULLIGAN. As I recall 1953 was approximately $3,850,000.

Mr. ROONEY. That is all.

Mr. YATES. I want to compliment Mr. Bakke upon his very excellent report, Mr. Chairman. I thought it was one of the most graphic and thorough and painstaking presentations that I have ever heard. I thought it was excellent.

Mr. BAKKE. Thank you, sir.

KNOWLEDGE OF CIVIL AIRCRAFT FLIGHT BY NELLIS AFB

Mr. YATES. Mr. Bakke, did the Nellis Air Force Base know about flight No. 736?

Mr. BAKKE. We have no indication that they had any knowledge of the flight, sir.

Mr. YATES. You mean you did not ask them whether they knew about this flight?

Mr. BAKKE. Oh, yes, sir; yes, sir. What I am saying is that there is no information which we have been able to uncover that indicates that they have any knowledge.

Mr. YATES. This is a daily flight, isn't it?

Mr. BAKKE. That's right.

Mr. YATES. Does this flight pass over Nellis Air Force Base, or near?

Mr. BAKKE. Almost directly over it, sir.

Mr. YATES. Almost directly over it?

Mr. BAKKE. Yes, sir.

Mr. YATES. It does this every morning?

Mr. BAKKE. Yes, sir, along with many other flights like this.

Mr. YATES. So it is reasonable to suppose that Nellis Air Force Base knew about this, isn't it?

Mr. BAKKE. Sir, if by "knowledge" you mean that the Nellis Air Force operational folk knew that there were aircraft overflying Nellis on a daily basis, I have no reason to suppose that they do not. What I am trying to say is, there is no requirement—to my knowledge there was no exchange of information concerning the whereabouts of this airplane or the fact that it was to operate.

Mr. YATES. But the point that appears to me is this. Every morning at approximately 8:30 this plane appears over Las Vegas, doesn't it?

Mr. BAKKE. Yes.

Mr. YATES. Doesn't this bear upon the jet penetration maneuver that was resorted to by the Air Force at this point?

Mr. BAKKE. I know of no bearing that it has on it, sir.

Mr. YATES. It has no bearing at all? Did the angle of the jet penetration approach the place where this plane would normally be in a morning?

Mr. BAKKE. The plane was sufficiently close to schedule that I think I can answer that question by saying "Yes." He was making this descent in a position that the airplane would very closely approximate each day.

Mr. YATES. Could you calculate what the angle of descent would be in terms of where the civil aircraft would be if the jet-penetration maneuver were actually followed through?

Mr. BAKKE. Yes, sir. But it would be the roughest kind of thing. I might here indicate to you a plot showing the 11 approach procedures which have been authorized—I think with one exception already authorized—for Nellis.

One of these is known as approach procedure 11, which is from station KRAM; and you will note as it takes place just about half the descent leg is inside the limits of the airway. This initial descent may be made at any altitude—if my memory serves me correctly—above 20,000 feet. This particular descent was initiated at 28,000 feet.

During the descent, from this portion of the descent path to the outer limits of the airway, there might well be a civil aircraft passing along this air route at any of the flight levels through which the jet aircraft passes.

What I am trying to say is, this may be duplicated 60 times a day because there are approximately that many flights that go over that area.

Mr. YATES. This is a dangerous procedure for the civil aircraft, then. This could happen at any time of any day, then. Is that what you are saying?

Mr. BAKKE. No, sir; I don't say that.

Mr. YATES. This is a reasonable conclusion for me to draw. If these penetrations occur in an airlane at a time when a commercial craft may be traveling through that area, why isn't it reasonable to suppose that this may again occur?

Mr. BAKKE. Sir, I would have to answer that question in two ways. In the first place, specifically with respect to these maneuvers,

I would be hesitant to establish any conclusion as to the probability that was involved because I don't know what the causes are.

Mr. YATES. All right. The next question I want to ask you: Are you in charge of all investigations for the CAB of accidents of this type?

Mr. BAKKE. Of all safety investigations.

INVESTIGATION OF NEAR MISSES

Mr. YATES. Do you investigate near misses?

Mr. BAKKE. I can answer that question categorically "Yes," from a purely statistical point of view.

Mr. YATES. Let me ask the question another way: Does the CAB investigate near misses when reported by commercial pilots? Or is this the function of the CAA?

Mr. BAKKE. Sir, the CAB does investigate. I was trying to give you some feel for the quantity.

Mr. YATES. That is what I want, the number.

Mr. BAKKE. In the last 2 years we have had reports of something like 2,000 near misses. Of those, we have investigated perhaps a half dozen ourselves. It is of that order.

Mr. YATES. One last question. Who usually reports them—commercial pilots?

Mr. BAKKE. From all pilots, military and commercial. We have a near-miss program—a very detailed report of which shall be sent to this committee before the week is out.

Mr. SHELLEY. Mr. Bakke, I want to join in complimenting you on the presentation you made and on the very well-constructed wording which you put together to inform us of your investigation.

CLEARANCE REQUIRED OF MILITARY AIRCRAFT

I would like to ask the following question. Is there at the present time any requirement that military aircraft taking off from a military field must clear through either the CAB or the CAA as to flight plan and be advised by them as to what routes they should and should not take? Or in what areas they should not fly because of the possibility of commercial airliners operating over an airway in the area?

Mr. BAKKE. The answer, sir, is "Yes; with respect to all closed IFR operations to be accomplished within controlled airspace." The answer is "No; with respect to all other operations."

Mr. SHELLEY. When you say all other, would all other operations include training plane flights from a field?

Mr. BAKKE. So long as they are conducted in accordance with visual flight plans.

Mr. SHELLEY. I have the impression that you have heretofore testified in your statement that there was no clearance or coordination in this present——

Mr. BAKKE. Between CAA and Nellis, sir, that's right.

Mr. SHELLEY. That is, I assume, standard procedure on this type of flight at the present time?

Mr. BAKKE. Yes, sir.

Mr. SHELLEY. Are there other areas in the United States in which there are military fields located that have training flights taking off from these fields and commercial airways over or immediately adjacent to the fields?

Mr. BAKKE. Yes, sir.

Mr. SHELLEY. That would lead us to the natural conclusion that if that does exist and there is no coordination of this type of flight that such a thing could possibly happen again—at least it does me.

Mr. BAKKE. To the extent that the same causative elements would be involved——

Mr. SHELLEY. That's what I mean.

Mr. BAKKE I think that would be a natural conclusion.

POSITIVE AIR TRAFFIC CONTROL EXPERIMENT

Mr. SHELLEY. Have you any thought or suggestion to make to this committee as to what might be done to eliminate such a hazard in the future?

Mr. BAKKE. Sir, on the 17th of this month a proposed civil air regulation was circulated by the Civil Aeronautics Board to authorize the Administrator of Civil Aeronautics to designate certain airspace, the dimensions of which are described in the regulation—the bottom of which would be at 20,000 feet; the top at 35,000 feet; and the width, approximately 40 miles, within which no aircraft shall move except under positive clearance by the air traffic control agency of the CAA.

This proposal, circulated as 58.8, is entitled, "Positive Air Traffic Control Experiment." This is an extremely far-reaching effort on the part of the Board. To minimize its impact on commercial aviation or military aviation I would think, sir, is to be blind to the fact that the total capacity of our present air traffic control system is sufficient to handle only a very, very small percentage of the total operations which take place at high altitudes today, and that the price for a current requirement for positive control in all airspace space—for instance, above 20,000 feet—would be only another way of grounding somewhere in the neighborhood of 85 to 90 percent of all operations that take place in that airspace.

Since by far the bulk of the operations in this airspace are military, I think the committee will appreciate the very profound effect that such a requirement would have. This proposed regulation is an effort to begin—true, on a somewhat modest scale—to apply a positive control to all aircraft operating in this airspace in order to determine first of all, the extent to which the capacity of our current system can be made to perform this function; and secondly, to determine what the total impact would be were such an operation extended elsewhere, upon especially our military operations at those high altitudes.

It may be somewhat ironic to note, but it is nevertheless a fact, that it suggests the possibilities that are inherent in this system, the airspace within which it was contemplated that this experiment should take place happens to overlap Las Vegas—the bottom of which would have been 20,000 feet.

The fact is that this collision occurred within the very airspace which the Board contemplated that a positive air-traffic control experiment should take place.

Unfortunately, the timing of this regulation is dictated not solely by one's ability to put it on paper; the timing must be predicated on the basis of the availability of tools to do the job.

So long as the capacity of the system doesn't permit us to do this kind of thing, it would be folly merely to regulate simply for the purpose of being on the side of the angels. We must regulate with the full knowledge of what the capacity of our system is. We recognize, of course, that this will apply some pressure to proceed in this direction.

I trust we will, sir.

COOPERATION OF THE MILITARY

Mr. SHELLEY. May I ask one other question. I don't know whether it will be you or Mr. Durfee who should answer it. To what extent would you say you have cooperation from the military in their flight operations and the application of the proposed plan which you have just told us about?

Mr. BAKKE. Sir, I would characterize the cooperation as excellent. They are apprehensive. This is understandable. They are cautious, but I would understand this as well.

I would nevertheless characterize their cooperation as excellent. They have never refused to sit down with us to discuss all the technical ramifications of the problems that face us.

Mr. DURFEE. I would add to that, Mr. Congressman. To be more specific, I think this is a point that we might as well go into now. Up until the last year the problems of the use of airspace by our civil and military aircraft were coordinated completely within the framework of the Air Coordinating Committee created by Executive order. Then this Air Coordinating Committee had specific jurisdiction and technicians who could handle the problems.

Suffice it to say the Board—and I believe the Administrator—found as the problems of diminishing airspace or congestive airspace became more acute and more complicated, we had evidence to the Board and the Administrator that the procedures provided solely within the framework of the Air Coordinating Committee were inadequate to meet this growing problem.

Therefore on July 29, 1957, the Board issued a notice of proposed rulemaking. In this notice—this rule has subsequently gone into effect on April 1, 1958—it proposed two important new rules, regulation, and control of airspace under power delegated to the Board by the Congress.

The proposed amendment, 60.1, of the Civil Air Regulations permits military aircraft of the United States Air Force to deviate from the established air traffic rules when appropriate military authority determines that noncompliance is required by military emergency or current military necessity essential to the defense of the United States, and prior notice is given to the Administrator.

The second regulation, 60.13 (a), the amended regulation, authorizes the Administrator, from delegation of the Board, to designate

restricted areas when he finds such action necessary to assure safety of all aircraft in flight.

The Administrator may impose such terms, conditions, and limitations as he may deem necessary or may modify or revoke such designations when required in the public interest.

In exercising this delegation of authority under the rule, the Administrator will comply with the provisions of the Administrative Procedures Act and all interested parties will be given a full and complete opportunity to participate in this rulemaking process in the designation of airspace by the Administrator.

I want to point out to the Board that the Administrator and the Defense Establishment have been working together to develop procedures to implement this regulation—the administrative procedures, which will be required.

I would supplement what has been said by Mr. Bakke. We have had excellent cooperation between the Administrator and the Defense Establishment to this end.

Mr. SHELLEY. Thank you, Mr. Durfee. Just one more point, and this—believe me, I assure you—is not said critically. If what you have just outlined to us was in full operation, would that possibly have contributed towards the elimination of the accident we are here discussing? Would it have been any factor in eliminating a possible hazard?

Mr. DURFEE. It is a step in that direction; a very decisive and important step.

Mr. PRESTON. Mr. Flood.

STATUS OF ADVANCEMENT OF ELECTRONICS TO MEET PRESENT NEEDS

Mr. FLOOD. Along this safety business, on all these things that you are talking about—money, men, and machines—is the state of the electronics art advanced sufficiently to meet your needs anyhow?

Suppose you had all the money you wanted. Suppose you had all the people you wanted. What is the state of the art with reference to the electronics industry, the electronics science, the production of hardware? What is the state of the art? Is this all academic?

Mr. DURFEE. Mr. Congressman, I believe that Mr. Pyle and Mr. Quesada are in a much better position to answer that question than I am.

Mr. FLOOD. I am not talking to you; you just happened to be in my line of sight. You are very attractive.

Mr. DURFEE. This is not my field, but even I would venture a general opinion.

Mr. FLOOD. All right, then, let's talk to somebody who knows.

Mr. DURFEE. I would answer the question that I don't think the state of the art of electronics and science have advanced to the point——

Mr. FLOOD. If you don't know, let's not answer it. Who should know the answer to that question? What is the state of the art vis-a-vis hardware to do all these jobs we have talked about starting tomorrow morning?

Mr. DURFEE. That is the problem of Mr. Pyle and Mr. Quesada. I think they are the two people who can answer your question.

Mr. FLOOD. Let them decide that. Don't you decide for them. Pete, do you want to take a shot at that?

General QUESADA. I will take a risk on that one. The state of the art is very far advanced in this field, and, by a systematic application of technology already proven, a major contribution can be made to the avoidance of collisions such as we are now discussing.

I would like to emphasize at this point, however, that hardware, per se, is not the end solution. It is a combination of technology, the hardware, and procedure. I want to emphasize the latter part. You can have all of the radar you possibly could buy; you could have all of the communications that you could ask for; but unless you have the proper procedure and proper method of using it, you really have nothing.

Mr. FLOOD. Let me ask you this, then, and this brings my friend Durfee back into the fold. I want to make this very clear. The title of your Board is Civil Aviation. My friend Pyle here is Civil Aeronautics.

RELATIVE IMPORTANCE OF CIVIL AND MILITARY AVIATION

The whole atmosphere of this dicussion this morning, and in the newspapers and editorials and everything else, has been "civil"—the importance and the predominance of civil aviation.

I don't accept that premise. As far as I am concerned, military aviation must be considered on the same level with civil aviation for reasons that are not necessary for me to detail. I just want to get back in the proper perspective. I don't like the impression that when anything goes wrong, it is always the military aviators who are at fault.

If there is an accident, regardless of what the altitude is, regardless of what kind of an aircraft it is, the first reaction of everybody is, "It's the flyboy that made the mistake," or "There was something the matter with his aircraft." At least I think that is the general atmosphere.

If that is not, then I have no problem. But if it is what I think it is, I want to have that put in proper perspective. The military people must have the same rights to airspace that the civil people have. I think that regulation that you read—I have a copy of that—is the thing that I think is the most important to our whole discussion—the quality, the nature, the value, the content of the regulation you issued in July.

I think Pete has that in mind, too. To what extent has it been implemented and executed, and to what extent is it in being? What is your time schedule? How fast are you going to execute that regulation? Must you crash the execution of that instead of just hardware and money and people?

That seems to me to be the important thing, because I persist and insist that civil aviators, scheduled and nonscheduled, leave their routes on visual flights to look at historical points of interest and geographical points of interest and topography or what not, with or without notifying anybody—military or civil authorities—in the area.

We are disbursing SAC bases by act of Congress, by appropriations increases, by supplemental appropriation bills. We are putting a wing of SAC on bases all over the lot. We are going to do the same

thing with TACAN. We have TACAN operations in the heart of America.

You can't have this both ways. In any hearings or investigations—this or any other—we must not permit the impression that civil aviation has first right and first claim to the airspace over this Nation. They do not. The military people want an equal footing, and it must be put in a better and closer perspective. I don't think it is in the eyes of the men in the street, or anybody else. I know it is in your minds and your board.

Now, this business of private industrial fliers and civil and scheduled civil fliers flying all over the air, all over the country, is a bad thing. It is just as important to military aviation that this regulation of yours be executed and these demarcating lines be determined as it is for the safety and the success of the future of civil aviation.

If our military aviation does not have the same rights and prerogatives down to the limit, then what you have for civil aviation will be entirely academic. There ain't going to be none or anything else.

I was only concerned with emphasizing that record, and the question of the state of the art in hardware at this point.

That is all, Mr. Chairman.

Mr. PRESTON. Mr. Clevenger.

Mr. CLEVENGER. Mr. Chairman, I think the gentleman from California covered the ground very well, and yourself. I am going to give a little more time to the rest of the members of the committee.

Mr. PRESTON. Mr. Bow.

MISSION OF NELLIS AIR FORCE BASE

Mr. BOW. Mr. Bakke, what is the nature of the Nellis Air Force Base? What is its purpose?

Mr. BAKKE. Sir, I am not familiar with all of the purposes of Nellis. The only purpose with which I am familiar is the operation of this one unit, the F100F training unit, which is an advanced jet-training operation.

Mr. BOW. May I inquire of the Air Fore the purpose of the Nellis Air Force Base.

Mr. GREENWAY. Colonel Lightner will answer that.

Colonl LIGHTNER. Nellis Air Force Base is the graduate school for fighter and bomber pilots. Students there have in the neighborhood of 325 hours flying time when they get there, and the curriculum is entirely one of graduating a finished product of fighter-bomber pilots.

Mr. BOW. It is a training base?

Colonel LIGHTNER. Yes, sir; Air Training Command.

OPPORTUNITY FOR PILOT ERROR FROM NELLIS AFB

Mr. BOW. Would you say that even though it is a graduate school, going into a different phase of training, that there would be more opportunity of pilot error from that base than in an ordinary base?

Colonel LIGHTNER. I will try to answer the question in this way, sir. The level of student training is relatively low for the normal run of pilot, of course. They are at all times under the supervision of experienced highly qualified instructor pilots. No formation de-

parts and operates in the area except under the leadership of an experienced instructor pilot.

Their combat maneuver training is done under the supervision of instructor pilots. There are designated areas off of airways and off of controlled airspace out of what is known as uncontrolled airspace in which the Civil Aeronautics Administration air-traffic control machinery has no part.

Mr. Bow. Colonel, although you have given us some background on it, you still haven't specifically answered the question—whether or not, even though it is a graduate school, there is more chance of the possibility of pilot error in that operation than at one of your other bases.

Colonel LIGHTNER. In comparison to an organized combat unit of the Air Force the answer would be "Yes," there would be more chance for error.

Mr. Bow. Does the airway fly directly over Nellis Field?

Mr. BAKKE. Yes, sir, it does.

DAILY TAKEOFFS AND LANDINGS AT NELLIS AFB

Mr. Bow. How many takeoffs on the average do you have at Nellis Training Base?

Colonel LIGHTNER. Takeoffs and landings per day run around 400.

Mr. Bow. Is it all jet?

Colonel LIGHTNER. It is all jet except for what transient activity of Air Force flights that might be going through the airbase.

Mr. Bow. Then you would say somewhere in the neighborhood of 400 takeoffs and landings of jets at Nellis?

Colonel LIGHTNER. Yes.

Mr. Bow. Chairman Durfee, you have mentioned in your testimony the question of whether or not enough money has been appropriated to take care of the completion of the airbase and equipment.

ADEQUACY OF FUNDS FOR FEDERAL AIRWAYS

I should like to draw your attention to the hearings of 1957. On page 228, when I was at that time examining the late Mr. Lowen, who was at that time with CAA, I made this statement:

> I believe that as our country or our Nation progresses, its transportation facilities progress. We are right up against it on this one so far as development is concerned. For that reason I should like to ask this question. With a budget of this size for the Federal airways, if this amount is approved, will you be able to use that money to develop the Federal airways during this fiscal year?
>
> Mr. LOWEN. Yes, sir. The study shows we will be able to use this money this next fiscal year.
>
> Mr. Bow. Have you asked for sufficient money to carry out this as rapidly as possible? I for one believe we must for the best interests of this Nation maintain the best possible system. I for one would furnish the money for it.
>
> Mr. LOWEN. Yes, sir, Mr. Bow.
>
> Mr. Bow. In other words, this is the maximum that you could use the next fiscal year with efficiency in the development of the Federal airways?
>
> Mr. LOWEN. Feasibly, Congressman, yes, sir.

It seems to me it is important to get a statement of that kind of the full amount and the maximum requested, because I have heard on the airways recently again, "Congress has not provided the money to take care of the airways and safety."

I think the matter ought to be brought to the attention of the public that Congress must rely upon those who testify before us. In this instance we had the Director of the CAA, who said that the amount requested was the maximum that could be used with efficiency at that time, and similar questions have been asked of CAA in the past.

AVAILABILITY OF LONG-RANGE RADAR IN LAS VEGAS AREA

Let me ask this question, Mr. Bakke, if you can answer it. If long-range radar had been in operation at Las Vegas on the day of this crash, do you believe it could have prevented it?

Mr. BAKKE. Sir, I think Mr. Quesada touched on the aspect of the answer to that question, which I also must take. There is long-range radar now available in the Las Vegas area.

Mr. BOW. From where?

Mr. BAKKE. There are several radar sites.

Mr. BOW. Phoenix is the closest, is it not?

Mr. BAKKE. There are three to my knowledge, sir.

Mr. BOW. Long range?

Mr. BAKKE. Yes, sir, of long-range radar. The answer I wish to give to the question is, however, the fact that there are radar facilities—GCI facilities—available in the area does not of itself provide the kind of service which you anticipate. There must be an incorporation into the system of the procedures and techniques of which those radar facilities are capable. This does not exist now.

Mr. BOW. Is it your opinion, then, that both of these planes were under surveillance by long-range radar?

Mr. BAKKE. No, sir; we have no knowledge that they were actually under surveillance.

General QUESADA. Could I just add some information there, Mr. Bow, which I think would be helpful to you?

Mr. BOW. Yes.

General QUESADA. The radar to which he refers was an air-defense radar. It is located some 30 miles to the north, if I recall correctly.

As I understand it, at that time the two aircraft were not under surveillance. However, I wish to emphasize, sir, that even if they had been, there would have been no assurance that the thing could have been avoided.

Mr. BOW. That is all, Mr. Chairman.

Mr. PRESTON. Mr. Horan.

Mr. HORAN. I am rather impressed, Mr. Chairman, with the number and the quality and the representation of the folks before us. We have the CAA and we have the CAB, and we have the Air Force, the Air Modernization Board—General Quesada.

When was that set up, General?

General QUESADA. Last August 14.

Mr. HORAN. We also have the Airline Pilots' Association here. Could we, Mr. Chairman, have the representative stand up so we can recognize him?

We have the Air Transport Association here, Gen. Milt Arnold. We have the Navy represented here, Captain Parker.

PROGRESS IN THE MANAGING OF THE AIRWAYS

It appears to me from my service on this subcommittee that we are at a place now where we can make real progress in the managing of the airways. When I first started to serve on this subcommittee, we didn't know what we were going to do. We had a big quarrel going on about TACAN and VOR/DME, and radar was just being developed.

This subcommittee was attempting to appropriate. We do feel now we have got a program going and we do feel that we have in the budget before us sufficient money to provide for the elimination of the mistakes—be they human or mechanical—to avoid such crashes as occurred last Monday.

What is your feeling in that matter, General Quesada?

General QUESADA. I think we are progressing at a very satisfactory or enviable rate. We are never satisfied. We can always do better. The installation of equipment, I think, should be a source of satisfaction to you. There will always be an opportunity of using more. That is always the case.

No one is ever satisfied in terms of the amount of equipment that they have. That is one of the laws of human nature, I suppose.

But I still—if I may, sir—emphasize again, if you had radar coverage over the whole United States down to 5,000 feet or less, which is a very, very expensive thing, I assure you, and I can assure you from my personal knowledge that has accumulated over 34 years, that that in itself does not solve your problem.

USE OF AIRWAYS FOR TRAINING

Mr. HORAN. General, when I started to learn how to drive a model T Ford, I got down in the hay pasture. I didn't get out on the main road. It seems to me that somebody ought to issue a regulation against anyone learning to drive a jet on the main road. That seems so obvious——

General QUESADA. That is another subject, sir. That is regulation.

Mr. HORAN. We have you from the research and modernization field; we have three operators here—the CAA, the Navy, and the Air Force; then we have the boys who are up there in those planes, and they don't want to die, either. That is the Air Force pilots.

It seems to me we ought to get together on something in this field and have our training operations kept separate from known routes. I wish you would comment on that.

General QUESADA. Mr. Curtis made a very comprehensive report on this after a prolonged study, aided by some very, very competent assistants. One fact stands in bold relief, once you read the report. That is, that air space is at a premium.

It is in short supply, and the demands for it appear to exceed the quantity.

NEED FOR COMMON SYSTEM FOR MANAGEMENT OF AIR TRAFFIC

Therefore he concluded that we need a common system for the management—if I may call it that, rather than control—for the management of air traffic. I would emphasize what you said, sir, about the Military Establishment.

I hope you won't interpret this as a reflection of my background. They do have approximately 40 percent of the total traffic. Am I in substance about right?

Colonel LIGHTNER. Forty percent of the instrument traffic.

General QUESADA. And I would guess equally—perhaps more than that—of total traffic.

The point I am making, sir, is that we must go to a single system for the management of air traffic that is a joint operation, both military and civil, and under a single management control.

Mr. HORAN. Are you moving in that direction?

General QUESADA. Legislation is being prepared that has that object. You must understand that the Airways Modernization Board is a joint military-civil board. As the Chairman, I consider myself the servant of both. I have the requirement by law—and certainly I accept it in a moral sense—to meet the needs of all users.

Mr. HORAN. Mr. Chairman, the only point that I am trying to make is that there are men in this room who can solve these problems if we can work together. This subcommittee feels its responsibility also, I can assure you. We take all this pretty seriously. I think you know that.

General QUESADA. You certainly do.

Mr. HORAN. We are encouraged by the picture as we see it now. Two years ago we didn't have as clear a picture, or the directional lights weren't so clear either. We didn't know what to appropriate to because, as you know very well—and I hope you will agree with me—there was considerable disagreement among even yourselves as to what ought to be done. Isn't that true?

General QUESADA. That is true. That was one of the driving forces that caused Mr. Curtis to recommend a joint board in order that there will be no unilateral action by any party.

Mr. HORAN. Speaking in behalf of this subcommittee, we don't want another crash to occur such as occurred Monday. We all feel our responsibility to do what we are supposed to do to avoid it. That is all, Mr. Chairman.

Mr. PRESTON. Mr. Laird.

COMPARISON OF CAB AND CAA APPROPRIATIONS AND AIRCRAFT ACTIVITY, 1951–58

Mr. LAIRD. Mr. Chairman, I would like the CAB to supply at this point the statement showing the total appropriations made to the Civil Aeronautics Board from 1951 through 1958, and opposite each year the number of aircraft in existence in each of those years.

Then, Mr. Chairman, I would like the CAA to supply at this point a listing of their appropriations from 1951 through 1958, and the total number of aircraft opposite the appropriations for each of those years which were in existence and were using the airways. That includes in both cases military and civil aircraft.

(The statement is as follows:)

CIVIL AERONAUTICS BOARD

Statement of appropriations and number of aircraft

Fiscal year	Appropriation	Active civil aircraft
1951	$3,500,000	54,039
1952	3,860,000	54,037
1953	3,800,000	55,505
1954	3,750,000	58,994
1955	3,838,600	60,432
1956	4,390,000	64,688
1957	4,625,000	67,500
1958	5,489,400	69,000

CIVIL AERONAUTICS ADMINISTRATION

Comparison of appropriations and aeronautical activity

Fiscal year	Appropriation	Active civil aircraft	Revenue passengers (domestic scheduled)	Aircraft operations (towers)	Fix postings (centers)	Instrument approaches
	Millions					
1951	$170.9	54,039	20,271,000	16,332,634	10,888,753	361,630
1952	138.9	54,037	23,512,000	16,673,562	12,635,817	405,051
1953	136.4	55,505	27,215,000	16,214,716	14,329,408	433,654
1954	116.1	58,994	30,229,000	17,260,195	15,619,680	456,682
1955	131.4	60,432	34,905,000	18,800,577	18,500,000	578,222
1956	[1] 197.3	64,688	39,870,000	20,383,867	22,900,000	712,000
1957	[2] 278.4	67,500	44,850,000	23,728,374	27,987,192	1,048,894
1958 (estimated)	[2] 385.8	69,000	50,000,000	27,000,000	33,880,000	1,300,000

[1] Includes $42.5 million in contract authorization.
[2] Includes $63.0 million in contract authorization.

Mr. ROONEY. In this connection, it is a fact with CAB, is it not, that the current year's appropriation is $1,100,000 more than it was in the previous fiscal year which ended last June 30? Is that right, Mr. Mulligan?

Mr. MULLIGAN. That is correct, sir.

Mr. DURFEE. Mr. Rooney, I would like to say this. You asked me a question about where I stand in the allocation of the increases in the 1958 budget. This committee specifically allocated specific amounts for economic consideration. I would agree there is not a prohibition against the Board from using that money in other areas.

I want to make this clear in this way before I leave this witness chair. As recently as 2 weeks ago, in a speech that I made before the Association of Local Airlines and Territorial Carriers in Las Vegas, I stated that within the past 2 years Congress has provided this Board appropriations in excess of 30 percent increases in our budget.

The Congress has been completely cooperative with this Board, and I don't believe in my history as a member of this Board that I have ever at any time stated that this Board ever had any difficulty in meeting its problems in the safety field and regulation and investigation. I don't believe I have ever stated that whatever problems we had were ever occasioned by any inadequacy of appropriations.

Mr. PRESTON. Thank you, Mr. Chairman.

LOCATION OF JET BASE IN CHICAGO-MILWAUKEE AREA

Mr. LAIRD. General Quesada, I would like to ask you a question that has come up that has to do with the location of various airports and

air navigation facilities. It was called to my attention by one of our leading newspapers in Wisconsin.

I am not criticizing the location of the new airbase which is being built at the cost of $50 million, which is located between Billy Mitchell field in Milwaukee and two major airports in Chicago—Midway and O'Hare.

Aren't these things cleared through your organization at all?

General QUESADA. Is this airport you are referring to a municipal airport?

Mr. LAIRD. This airport will be a military jet base that was originally set up as an interceptor base, but it is now going to be one of the SAC bases where bomber planes and fighter planes and interceptors will fly.

General QUESADA. That is not cleared through us.

Mr. LAIRD. Isn't there any effort made by the military to discuss these matters with the people that are in civilian aviation as far as the location of these bases?

General QUESADA. It wouldn't be with me. It might be with Jimmy Pyle. I don't know if this particular field was discussed with Jimmy. I think he could answer that.

Mr. LAIRD. I happened to go up and fly with the pilot over this particular area, and he made quite a point of this location of this particular base. This was later made a part of a newspaper account of this thing.

Mr. Pyle, are these bases cleared with you?

Mr. PYLE. Mr. Laird, these cases were put through the Airspace Panel of the Air Coordinating Committee, on which the military and ourselves and other agencies sit.

This matter is discussed in the panel, and an agreement is reached as to the manner in which they will be put in, the use of the airspace approaches, and so forth.

Mr. LAIRD. Was this particular base between Midway and Billy Mitchell in Milwaukee discussed and cleared by your panel?

Mr. PYLE. I will have to supply the answer, to be accurate, for the record, Mr. Laird.

(The statement may be found on p. 70.)

Mr. LAIRD. That is all I have.

Mr. PRESTON. Mr. Thomas.

Mr. THOMAS. Mr. Chairman, I just want to make one small observation here. I just want to say a kind word in favor of these civilian and military agencies. What was safe in this industry 2 or 3 years ago is far from being safe today. So, let's don't say now that the agencies didn't ask for enough money or we didn't give them enough money. That is begging the question.

I see the gentleman from Kansas City over there looking. We agreed—he and I, together, off the record, 2 years ago—that the time was going to come much quicker than John Q. Public realized that we were going to have to practically do what General Quesada is now trying to do—get some legislation where you are going to control every airplane from the minute it gets off the ground in the continental United States until it gets back again.

That is going to take some regulation, some manpower, some equipment, some dollars—4, maybe 3 to 5 times what is being used now.

Mr. ROTHSCHILD. And a lot of time.

Mr. THOMAS. So, let's don't get mad at each other. That is not the purpose of this hearing. We are just trying to find out what we can do to prevent this thing from happening again.

Excuse me, Mr. Chairman, for interrupting.

SUMMARY OF APPROPRIATIONS FOR AIR-NAVIGATION FACILITIES

Mr. PRESTON. At this point I would like to supplement the comments made by Mr. Bow about the funds requested by Mr. Lowen, whose testimony you read a moment ago. That testimony was given in support of a request for $40 million for the establishment of air-navigation facilities.

Shortly after that testimony was given, when he assured us that that was, in his opinion, all he could use feasibly, the crash occurred over the Grand Canyon. Immediately he came again to this committee with a request, and we added to that $40 million, which he had previously said was adequate, $35 million in a matter of months. So, the total amount for the establishment of air-navigation facilities for that year was $75 million.

I would further like to add and insert in the record at this point a statement of appropriations by the Congress under the 2 main categories of the Civil Aeronautics Administration; 1, operation and regulations, the amounts being shown from 1950 through 1958 actually appropriated. The increase is as follows: In 1950, $103,499,105 was appropriated—$103 million. Eight years later, in 1958, Congress appropriated $181,747,800, or an increase of $78 million.

In the area of establishment of air-navigation facilities, the Congress has increased the appropriations for the Civil Aeronautics Administration from $6,603,000 in 1950 to $124,603,505 in 1958, or an increase of $118 million in an 8-year period of time on an annual basis.

So, it is perfectly obvious that Congress has been undertaking to keep abreast of the needs in the area of providing facilities, equipment, and men to man them. At no time have I detected among members of the Appropriations Committee any disposition to minimize the importance of keeping abreast of a rapidly growing aviation industry and a rapidly expanding military air force in the country.

Mr. FLOOD. May I ask this, in fairness to these people? It is my opinion, in fairness to the CAA, the CAB, and the military people, that this country and this Congress has got dollar performance for every dollar we have appropriated. I think these people in charge of this operation, or the various Government agencies concerned, under all the circumstances, the state of the art and the traffic and the whole fantastic problem, have, up to the hilt, done everything that Congress or the public can reasonably and possibly expect to be done under the circumstances.

Mr. HORAN. Mr. Chairman, just one question——

Mr. PRESTON. Gentlemen, we are not opening this up for general questioning at this point. I will allow one question at this point. At that time I will conclude before we have any further questions. Yes, sir?

RESPONSIBILITY FOR AIR TRAFFIC CONTROL

Mr. HORAN. I am not asking this facetiously, but it seems to me there should be some top echelon to this planning, to whoever handles this thing. As I tried to point out in my testimony, we have got

some pretty important men here in this room right now as regards aviation. Is it the President who runs the show, or is it Mr. Durfee, Mr. Quesada, Jimmy Pyle? Who is the person that you can look to as the top, responsible person?

Mr. PRESTON. Since I obviously know none of these gentlemen would care to answer that question, I will make the observation, Mr. Horan, that it is the hope that the new Airways Modernization Board will be the coordinating agency that will give the guidance for all people concerned with this problem.

Mr. HORAN. That is the reason for my raising that question, Mr. Chairman.

Mr. DURFEE. I would say this, Mr. Chairman. I believe the Defense Establishment and the Administrator will concur, the responsibility for control of the airspace and air traffic control, both civil and military aircraft, under existing legislation, is placed by the Congress in the Civil Aeronautics Board insofar as regulation of airspace on air traffic control for both civil and military aircraft subject only to the reservation of power to the President of the United States, section 4 of the act reserving to the President the power to specify areas—restricted areas—restricted for the national defense and other purposes.

I believe it was pursuant to that interpretation of our responsibility that we promulgated this rule in which we asserted that authority, and delegated that authority to the Administrator. I can state that our authority to promulgate that regulation was concurred in officially by the Department of Defense in two separate communications, written communications, received by the chairman of the Civil Aeronautics Board and the Assistant Secretary of Defense, Mr. Quarles, in which he stated in essence the Board had the requisite legal power to promulgate this regulation.

General QUESADA. Sir, I would prefer to stay silent on this point, but I think it might be a disservice if I did. I bring this up with some degree of embarrassment.

The fact remains that the responsibilities of coordinating these efforts in the executive department rest with the President. All of us recognize that, I am sure.

Also, sir, the President has appointed a special assistant to advise him on aviation matters in response to the Curtis report. That special assistant is in fact me.

I would prefer to have stayed silent. I don't like to bring things like that up, but they are the facts.

Mr. THOMAS. Repeat that last statement. I have got the book here in my hand.

General QUESADA. I was saying in response to the question as I understood it, who was responsible for coordinating within the Executive branch of Government. My interpretation is that in the final analysis, the responsibility rests on the President.

Mr. THOMAS. This agency is set up here as an independent agency—independent, just what it says and it is treated as an independent agency. I think the language is awfully ambiguous, but the opening statement of its basic act says it shall—it doesn't say it may. It says "shall" regulate commerce—CAB.

General QUESADA. I am not questioning that. I am only responding to the question.

Mr. THOMAS. Where does the President come in then if it says this agency shall regulate it?

General QUESADA. I don't think that my remarks should be interpreted to question the legislation.

Mr. PRESTON. Gentlemen, this hearing must be conducted in an orderly way. If you have other comments to this question——

General QUESADA. That is no further comment other than bringing that to your attention.

Mr. PRESTON. The committee is not seeking a jurisdictional dispute here today. However, it is a very timely question. The question of maintaining two separate agencies, a Board and an Administration in civil aviation, has been discussed by Members of Congress for some time. There is a real area of debate on this point as to whether there should be one civil aviation agency in the Government to deal with these matters.

But now let's go back, Mr. Durfee, before we finish with the CAB, to this question of air safety.

Mr. DURFEE. Mr. Chairman, may I interject one statement? As far as I know today there is no jurisdictional dispute between the Defense Establishment, CAA, and the CAB, and if you want evidence of that I will be glad to produce a letter from the Assistant Secretary of Defense, Mr. Quarles.

I think that is the best evidence to settle any question. There is no jurisdictional dispute about the power of the Board as an agency of the Congress to promulgate this rule in which we have asserted regulation over the airspace, which in turn has been delegated to the Administrator. I don't think there is any dispute about that.

Mr. PRESTON. Very well, sir.

POSSIBILITY OF PROCEDURE OR DEVICE THAT WOULD HAVE PREVENTED LAS VEGAS ACCIDENT

Now with reference to the accident at Las Vegas, even if the committee had given you $10 million additional last year in your budget request, it wouldn't have in the least contributed to the avoiding of this accident at Las Vegas, would it?

Mr. DURFEE. No, sir.

Mr. PRESTON. We hope that we can establish here today some degree of solution to the problem. We have the problem of regulations in your agency and the problem of equipment and men and materiel in the agency of the CAA. I want to ask this question. I believe an answer was given a moment ago to some extent, but if long-range radar had been in existence at the Las Vegas Airport and en route surveillance radar had been in existence at several intervals between Los Angeles and Las Vegas, and the jet aircraft made its penetration as it did, would the fact that such radar had existed make any difference in avoiding this accident?

Mr. DURFEE. I believe, Mr. Chairman, insofar as civil authority is concerned, I would refer that question to Mr. Pyle.

Mr. PRESTON. Mr. Pyle.

Mr. PYLE. Mr. Chairman, my answer would have to be this. It is conceivable if we had had the radar, if we had had the personnel, if we had had all the things that go with it, including the proper communications on both the ground and the aircraft, it would have made some difference.

But the problem, Mr. Chairman, is that this is all over the country. We have discussed this with the committee. I think you are well aware of our program. We go into greater detail——

Mr. PRESTON. But Mr. Pyle, the thing you ignore in answering this question is the fact that you would not have had any information whatsoever that these military aircraft were about to make a penetration. Under the procedure established, you are not even notified.

Your monitors of radar would not have been searching or even monitoring this military aircraft under existing procedures. Isn't that true? Is that true or not?

Mr. PYLE. That is correct, sir. But I think in my answer I tried to point out that the procedures of the nature you speak of are involved in my answer. It is only with the change in procedures——

Mr. PRESTON. Oh, yes, but you injected a new angle into this question that I didn't ask about.

Mr. PYLE. I am sorry.

Mr. PRESTON. I asked purely about the question of materiel, under existing procedure.

Mr. ROTHSCHILD. Mr. Chairman, if we had the radar and didn't have the people to operate it, if we had the radar and the people and didn't have the procedures, it wouldn't work.

Mr. PRESTON. It wouldn't work; of course, it wouldn't. So we are going to be today dealing with procedures to a great extent.

SIGNIFICANCE OF DISTINCTION BETWEEN VFR AND IFR

Now, General Quesada, does the distinction between VFR and IFR remain significant with the greatly increased speeds of aircraft?

General QUESADA. Yes; it does.

Mr. PRESTON. Even with the increased speeds of aircraft?

General QUESADA. It does.

Mr. PRESTON. We are told that the ability of a pilot in a jet aircraft to see an object in the distance is quite difficult. He is upon the object almost before he realizes it.

General QUESADA. That is my point. That is the point I wish to emphasize when I answered your question in the affirmative. Perhaps I didn't understand the question.

Mr. PRESTON. I don't believe you understood the question. Does the distinction—in other words, does the fact that a plane is flying VFR or IFR make any difference with high speed aircraft of today? Does it make a major difference?

General QUESADA. I think I could answer this by saying, as the performance of aircraft increase, the necessity for positive control also increases.

Mr. YATES. Mr. Chairman, is that an answer to your question?

Mr. PRESTON. It is a type of an answer.

Mr. YATES. I don't think it is an answer, really. I think it is an important question. That is the reason I raised it. I wonder whether there is the distinction that should be maintained with the speed of aircraft?

QUESTION AS TO SAFETY OF UNCONTROLLED JET FLIGHT OVER LAS VEGAS AREA

Mr. PRESTON. The following question will, I think, take care of it. Can we regard the uncontrolled flight of a supersonic jet in the Las Vegas area as a safe operation?

General QUESADA. I would say safe——

Mr. PRESTON. For whom?

General QUESADA. The pilot can see, but I think by the very nature of the speed and the existence of other aircraft, a hazard automatcally exists by virtue of the fact that the two are in the same air space. You have created some degree of hazard.

Mr. SHELLEY. Which is a reduction of the safety factor.

General QUESADA. On the part of both parties.

Mr. DURFEE. In promulgating the rule which Mr. Bakke has referred to, the regulation authorizing the Administrator to designate a portion of the air space within which positive control of aircraft can be exercised, the Board made this comment:

> In applying the principle of "see and be seen," in the air-traffic rules of part 60, the Board up to the present time has dealt principally with the meterological conditions which affect the pilot's ability to see other aircraft. For some time, however, it has become increasingly apparent that the long established see and be seen philosophy applicable to VFR flight must also take account of the extreme rates of closure which are the results of very high speed with which certain aircraft operate. Under certain circumstances, it appears that the rate of closure of very high-speed aircraft is such that the total time in which the aircraft might be visible to the pilot of other aircraft is so short that the pilots cannot be expected to insure separation between aircraft irrespective of the weather conditions at which they are flying.

Mr. YATES. What conclusion did you come to from that?

Mr. DURFEE. We came to the conclusion, the immediate conclusion, that it was necessary to promulgate a rule, which we did, authorizing the Administrator to designate the portion of the airspace within which perhaps, for experimental purposes within a certain airspace, all air traffic would fly at a certain altitude, and the altitude in which these operations are customarily operated will be under positive control. That is, that area will be limited by the Administrator's own discretion as to how he can implement this rule.

Mr. YATES. I would still like to get an answer to your question.

Mr. PRESTION. I will yield to one question and only one. If we are going to maintain the order agreed upon—and that was agreed upon——

SIGNIFICANCE OF DISTINCTION BETWEEN VFR AND IFR

Mr. YATES. I want an answer to your question. You start out in that regulation talking about the fact that the distinction between visual fligh and instrument flight no longer exists because of the speed. Then I ask you where do you draw the distinction that they should all be on instruments? You don't give us any answer to that question. All I am asking for is an answer to your question.

What is your answer to the question?

Mr. BAKKE. Sir, I think the answer to the question clearly is that ultimately they must all be under positive control.

Mr. YATES. On instruments?

Mr. BAKKE. We must presume that they are in solid cloud, being separated by an outside agency.

Mr. YATES. That is what I wanted to know.

EFFECT OF POSITIVE CONTROL

Mr. PRESTON. Mr. Bakke, the type of positive control that you propose to experiment with, does that involve high altitude flying only?

Mr. BAKKE. Yes, sir, for the time being it does.

Mr. PRESTON. Does that affect planes flying at all altitudes?

Mr. BAKKE. That is the object of it. There are many plans in existence which represent agreements among agencies of the Government and other users of airspace which contemplate that this kind of control, once established, will be brought down to lower altitudes. This certainly contemplates ultimately that that will take place.

Mr. PRESTON. The inevitable result of that will be a serious limitation on the operation of military aircraft to the extent of 50 percent or more and would limit private flying by at least 75 percent.

Mr. BAKKE. No, sir.

Mr. PRESTON. And would materially affect commercial flying; wouldn't it?

Mr. BAKKE. No, sir. I think the answer to that is emphatically "No." The reason that this is at this moment only a proposal I think is indicative of the fact that the rate at which a system of positive control can be introduced into our system of air traffic control must be related to our capacity to handle without asking an excessive price of military and civil operations. The fact that we are moving as slowly as we are is to avoid the kind of price that you suggest would be the result of this action.

EXTENT OF CONTROL OVER FLIGHTS WITH EXISTING EQUIPMENT

Mr. PRESTON. Isn't it true under existing regulations today that they are so lax that your majority of flights are conducted on a VFR basis, and many of those flights could actually be controlled today with existing equipment that we have? Is that a fair statement?

Mr. BAKKE. Yes, it is a fair statement, but the total contribution to the safety of that operation would not have been materially increased, sir, by that control. So long as we mix VFR and IFR operation in the same airspace, the fact that we may control a small segment of that total traffic doesn't materially add to the safety of the total operation. There is still the same number of airplanes mixed and the same dependence upon the ability of the pilots to see and to avoid. It is this mixing of traffic that we are proposing here to eliminate, at least within this limited airspace.

Mr. PRESTON. The bulk of the air traffic today is the lower space; isn't it?

Mr. BAKKE. Yes, sir.

Mr. PRESTON. The majority of it?

Mr. BAKKE. Yes, sir.

Mr. PRESTON. The military is flying in that space in good weather without any civil control?

Mr. BAKKE. That's right.

Mr. PRESTON. Private aircraft are flying in that area in any altitude they see fit to fly and in any direction, without filing—obtaining CAA clearance. Is that true?

Mr. BAKKE. Yes, sir.

Mr. PRESTON. Then along comes a commercial plane that is assigned an altitude and they fly on a fixed altitude, I suppose?

Mr. BAKKE. That's right.

Mr. PRESTON. The majority of them fly at an altitude established by CAA?

Mr. BAKKE. The majority of them do, sir.

Mr. PRESTON. You have got one segment of it controlled and the rest of them are flying at will through the airways?

Mr. BAKKE. That's right.

Mr. PRESTON. The point I make is that we could exercise a greater degree of control over that traffic today than is being exercised, even with existing facilities. Is that accurate or not?

Mr. BAKKE. Yes, sir; I agree with that, sir.

Mr. PRESTON. Mr. Pyle, what do you think of that?

Mr. PYLE. The statement is accurate, Mr. Chairman, but we do so at a penalty to the users of airspace, which includes the military and general aviation and in certain instances the airlines themselves.

Our objective is the same as the Board's, to get positive control as fast as we can get it. I think we will elaborate on this point this afternoon. The difficulty is, cost, the time that it takes, the equipment that it takes, and the procedures that it takes, the men that it takes to recruit and train. I think it is only fair to state to the committee that we cannot do this overnight. We are moving as fast in this direction as we possibly can. With the help of this committee, we are getting there much faster than we had ever hoped before.

Mr. THOMAS. Mr. Chairman, does he mean cost penalty in terms of dollars or what does he mean?

Mr. ROTHSCHILD. Penalty in terms of ability to operate.

Mr. THOMAS. So you are going to let a man go up there and break his own neck?

Mr. ROTHSCHILD. The penalty would work both ways, Mr. Thomas. If we were to put under positive control at certain altitudes all those aircraft which we have the capability of handling today, there would be so few aircraft of both military and commercial kinds that there would be a severe penalty imposed on our defense and severer penalties imposed on our airlines.

CONCERN OVER MILITARY OPERATIONS IN CONGESTED AREAS

Mr. PRESTON. Mr. Pyle, this is going to take a very forthright answer on your part. But has the fact that military aircraft operate around congested areas under VFR conditions without any liaison with the civil tower caused you considerable concern in the past?

Mr. Chairman, the answer, I think, is—I can make a forthright answer. It concerns both the military and ourselves. We sit down constantly reviewing, reexamining, and then reexamining once again how we can better handle this type of traffic. It is a problem to both the military and the civil.

I cannot deny this. We are doing our level best. We had a meeting all yesterday in this very area. We reexamined this whole problem.

Mr. PRESTON. The answer is "Yes, it has concerned you?"

Mr. PYLE. It has concerned us and it has concerned the military.

EXTENT OF REGULATION OF MILITARY OPERATIONS

Mr. PRESTON. Have you at any time sought to obtain regulation that would permit you to have some degree of control over military operations?

Mr. PYLE. We have the necessary right within present regulations to do so. We do exercise this ability.

Mr. PRESTON. You don't exercise any control because you are not even contacted by VFR from military fields, are you?

Mr. PYLE. We exercise the control in one area, as you well know, Mr. Chairman—bad weather conditions.

Mr. PRESTON. I am talking about VFR.

Mr. PYLE. In good weather conditions, we try and work with the military on the proper procedures for the use of navigation facilities even in simulated training missions. When you speak of exercising coordination between the two, this has not been done. This is an area that we propose to explore further with the military.

Mr. PRESTON. Mr. Durfree, what other existing regulations are there with reference to military aircraft, the use of Federal airways?

Mr. DURFEE. Mr. Bakke?

Mr. BAKKE. Sir, in the sense that part 60 of the civil air regulations governs all who fly within the navigable airspace of the United States, the Board's regulations are not specifically civil in character. They are applicable right across the board to all operations, military and civil.

As was indicated in the portion which was read by Mr. Durfee, right at the moment the principal distinction between operations which are under the direct control of the CAA, air traffic control agency, at this time is in large part the weather conditions through which they fly.

If there are bad weather conditions which exist in controlled airspace, military and civil aircraft alike are subject to the control of the Administrator. In good weather conditions, however, neither civil nor military, and in the same proportion, are subject to direct control by the Administrator.

However, there are other avenues of control. For instance, the Administrator is required to approve, to publish, or approve such things as instrument approach procedures. The Administrator exercises at least some control over the military in the establishment of these procedures.

The various approach procedures which I described to you this morning that are in existence at Nellis are coordinated between the military and the Administrator.

So in many aspects of the military's operations which directly affect air traffic, the Administrator does, by coordination and at times by direct control, supervise that operation. We are intending, of course, by this proposal to expand the area of direct control.

HAZARD OF JET PENETRATION INTO LOWER LEVEL TRAFFIC MOVEMENT

Mr. PRESTON. Mr. Bakke, even if we had unlimited facilities on the ground and unlimited personnel to operate them, we would still not eliminate the hazard of a jet penetration, would we, coming down into traffic moving at a lower level under all kinds of control?

Mr. BAKKE. Sir, if we had unlimited air-traffic control capability, the answer would be "Yes"——

Mr. PRESTON. Oh, no, I didn't say capability; I said facilities and people.

Mr. BAKKE. Just facilities and people? It takes more than that.

Mr. PRESTON. The danger of a jet penetration would still be with us?

Mr. BAKKE. Yes, sir.

Mr. PRESTON. How can a jet penetration be made harmless?

Mr. BAKKE. Sir, by adding to the unlimited personnel and facilities the ideal air-traffic control system within which those personnel and

facilities are exploited. By putting those three together, we will have rendered jet penetration procedures harmless.

Mr. PRESTON. Is it just that simple? Say that again, now?

Mr. BAKKE. You have used some far-reaching words, sir. When we use the words "unlimited facilities," sir, and when we specify ideal procedures, obviously this is not within our grasp at the moment. As a practical matter, we don't have——

Mr. PRESTON. Do you believe that a utopian situation will ever be created in aviation?

Mr. BAKKE. No, sir.

Mr. PRESTON. Is it possible for the electronics segment to keep abreast of the development of aircraft themselves?

Mr. BAKKE. Sir, one of the dilemmas we are faced with is that the increase in the state of the art so far as the performance of aircraft is concerned is at a pace far greater than the improvement in the state of the art in controlling those for air-traffic purposes.

As of the moment, it is true we are far behind, and it will be very difficult to catch up.

Mr. PRESTON. Gentlemen, in order that everybody might have time to get an adequate lunch, the committee will stand in adjournment until 2 o'clock.

COMMITTEE PROCEDURE

Mr. DURFEE. Mr. Chairman, may I ask a question before I leave, and before the representatives of my staff who have been here leave? I understand correctly that the hearings of this committee are an executive session, and I assume when we get outside, if any members of the press should approach us, we will state that we are not in position to make any comment.

Mr. PRESTON. Gentlemen, that is a very delicate subject.

Mr. DURFEE. That is a delicate subject which I anticipate as soon as we get out in the hall.

Mr. PRESTON. I do not propose to set myself up as a censor on anybody. The usual procedure in the House Appropriations Committee is that the hearings are executive. We ourselves have concluded this morning that, in view of the great public interest in this hearing, the chairman would make such statement as would be appropriate, considering all other factors and angles involved in this hearing.

Mr. ROTHSCHILD. From time to time, Mr. Chairman? Or at the conclusion of the hearings?

Mr. PRESTON. At noontime and at the conclusion. You can settle this thing for yourselves as to what you want to do.

Mr. DURFEE. Mr. Chairman, I would say from my experience following the Grand Canyon investigation at Las Vegas—which resulted in some premature and very disastrous publicity, such as events later proved, publicity which, for example, placed the responsibility for that terrible accident and the resulting death of 128 people on one specific pilot, which later was disproved as the investigation was concluded—I would say that the policy which you have set is certainly merited by the experience that happened at Las Vegas.

Mr. PRESTON. We hope to avoid just that. That is why we have reached this decision on this side of the table.

We will be in recess until 2 o'clock.

AFTERNOON SESSION

Mr. PRESTON. The meeting will come to order. If there are witnesses or observers present this afternoon that were not here this morning, will you please stand up and identify your organization or position?

Mr. LAWTON. Yes, Mr. Chairman. I am William K. Lawton, executive director of the National Business Aircraft Association. I am a listener.

Mr. PRESTON. Is there anyone else?

STATEMENT OF MR. GILBERT GREENWAY, DEPUTY ASSISTANT SECRETARY, DEPARTMENT OF THE AIR FORCE

At this point the committee would like to hear some testimony from the Air Force, and we have with us the Deputy Assistant Secretary, Mr. Gilbert Greenway. We also have Maj. Gen. Morris Preston, director of operations, and Colonel Lightner and Mr. Howard and Major Meade and Capt. Arthur Keyes from Nellis Air Force Base.

POSITION OF AIR FORCE ON USE OF FEDERAL AIRWAYS

Mr. Greenway, has it been a matter of discussion between the Secretary's office and the other civilian aviation agencies of the Government to the matter of the joint use of the Federal Airways?

Mr. GREENWAY. Yes, sir. It certainly has.

Mr. PRESTON. What is the position of the Air Force on this matter?

Mr. GREENWAY. The position of the Air Force is one of absolute cooperation with the civilian agencies, both the Civil Aeronautics Administration and Civil Aeronautics Board.

We recognize that we are one of the groups, one of a number of groups, of the users of airways, and that the airways must be used as nearly impartially as possible by all the users. We therefore feel that we must cooperate with the civilian agencies in order that the air carriers, the business planes, and the private planes have as free use as possible of the airspace.

Mr. PRESTON. Has there been any discussion had as to setting aside certain areas for military operations?

Mr. GREENWAY. Yes, indeed, sir. There are a number of areas set aside for military operations. The primary point, of course, is to protect other segments of aviation from wandering into what inadvertently might be an area of dangerous activity, such as the type of activity that must be engaged in by military aircraft.

I mean by that very unusual maneuvers such as firing the rockets and rapid changes of altitude and rapid changes of speed, even aerial gunnery, such things as that, and by setting aside areas of airspace, we hope thereby to protect other segments of aviation from possible injury.

Mr. PRESTON. Is there any thought given to the proposition of keeping all other military maneuvers out of the air?

Mr. GREENWAY. No, sir; I do not think so because if you prohibit the military aircraft from using the Federal airways, you would in effect break the military air strength of the Nation into a number of little segments.

Also, I may add that there are various types of military flying. You would not necessarily wish to keep a military air transport service

airplane off the civil airway. Certainly, it should use the civil airways and instrument flight unless conditions pass to control of the civil airway authorities. Under conditions of visual flight rules we use the civil airways in the same manner in which other segments of aviation use them.

CONCERN OVER LACK OF LIAISON BETWEEN MILITARY AND CIVIL CONTROL TOWERS

Mr. PRESTON. Has there ever been a matter of concern to the military that there was no liaison between the military control towers and the Civil Aeronautics Administration control towers on VFR flights?

Mr. GREENWAY. The answer is "yes." There always has been concern over any mixture or types of airplanes. With the present state of the development of our airways, we have done the best we can in conjunction and in coordination with the civil authorities to make as safe the operations as possible.

We study each individual case, Nellis being an example, together with the civil authorities. In this case, the jet penetration pattern is worked out, is mutually accepted as being the safest method of the use of that pattern, of that particular airspace, and the traffic is carried on under those mutually agreed rules.

Mr. PRESTON. But, at the same time, there has been a lack of information available to the civil control tower as to when such a jet penetration would occur. I realize there are many, but there has not been any information passed on to the Civil Aeronautics Administration of penetration by jet aircraft from high altitudes down to the lower traffic patterns, has there?

Mr. GREENWAY. We are beginning to get into an area that is, possibly, beyond my competency. Could I refer this question to Colonel Lightner, who is much more conversant with this than I?

Mr. PRESTON. Certainly. Would you comment, Colonel Lightner?

Colonel LIGHTNER. Mr. Chairman, as I understand your question, it is that your concern is the lack of information on CAA's part of our penetration traffic; is that correct?

Mr. PRESTON. Yes, sir.

FILING OF FLIGHT PLANS

Colonel LIGHTNER. Under VFR conditions—this is clear weather, good weather conditions—a military flight or a civil flight operating under these conditions, under a VFR flight plan, is not required to, the information on this flight is not required to file it or is not required to find its way into CAA air traffic control channels.

CAA handles those flights, as Mr. Bakke formerly pointed out; those flights which are on an IFR flight plan must file that plan with the air-control people. However, when it is VFR conditions, the flight plan does not have to be filed to operate in this manner. The CAA does not know about it, nor do they require the information, military or civil.

In this case we have a situation at Millis where local training activity under VFR flight rules operates in the local area unbeknownst to the CAA because they are not required to be made known to CAA.

If the requirement came about to establish procedures which would give such information to CAA, the Air Force is perfectly willing to make such information available to them.

Mr. PRESTON. Let us take the case at hand, and we are using this more as an example than as an investigation.

There was a great deal of information available about the commercial liner's activity on this day. If I am in error, you will, please, correct me. But the air traffic control center at Los Angeles held it in its operating room or in its airspace until it reached a certain point, at which time it was transferred over to Salt Lake City. A great many people, a lot of equipment, are employed in keeping account of this as it moved along at 21,000 feet.

It was not stopping at Las Vegas. It did merely report to the communications station at Las Vegas as it went over. Had none of this information as to its whereabouts, its altitude—all of this information being kept at great expense involving a great deal of personnel and equipment, none of this was made available to the military airfield which was operating a number of high-speed aircraft in the area. Your fliers were in the dark as to this plane, and if this information is readily available in the control center—I am asking this for information—why would it not be possible to pass it on to the military people that traffic is moving over that space and is due to arrive over Las Vegas at a given time?

Would that be of any help? I direct to you, Colonel. Would it be of any help to have that information from the civil authorities?

Colonel LIGHTNER. I think, sir, it would definitely be of help to have this information. It has a use when CAA can provide that information. Another question is when it should be used by CAA. When should CAA be told that about the information you have on other traffic that is in an area in which they are operating—the more of that sort of thing the better it is to provide for safety through visual flight conditions.

Mr. PRESTON. If an aircraft moves along a known airway on a regular schedule, as this aircraft was doing, why would it not be taken into account by your military controls and give a clearance to jet aircraft to make a penetration or make an instrument landing or radio range approach?

Colonel LIGHTNER. Basically, sir, the Air Force does not have the responsibility for separation of traffic.

Mr. PRESTON. We are quite aware of that, Colonel.

Colonel LIGHTNER. Yes, sir.

Mr. PRESTON. But, at the same time, if you people know that flight No. 736 comes through this airway every day at, let us say, 8:30, 7 days of the week, unless he is delayed, and if he is delayed the air-control center can so advise you, by establishment of the proper communication between Salt Lake City and your military control—if they know that, why is not that a factor that is taken into account in giving clearance to a military aircraft to make a penetration?

Mr. FLOOD. Mr. Chairman, may I interject here to say that I am unable to hear your question down here.

Mr. PRESTON. Would the reporter read back the question?

(Thereupon, the reporter read back the immediately preceding question by Mr. Preston.)

Mr. FLOOD. Thank you.

Colonel LIGHTER. That is important information in this case and is usable information, but it must be accurate information on the aircraft in the air, not the fact that he is a scheduled flight, that he is due at a certain time of the day—this is not really usable information as far as controllers are concerned.

Mr. PRESTON. Why would it not be, Colonel, if this aircraft is reasonably on schedule every day, and most of them are, and the required communication follow a pilot operating at 27,000 feet to make his penetration down to fourteen, and he requests at 8:35 to do that, and the controller knows that a DC–7 is scheduled to move through that airway at 8:30, why should he not say, well, this is a pretty dangerous time to be bringing these boys down from 27,000 feet to 14,000 feet?

Colonel LIGHTNER. I think the assumption there that they are on time at a given time every day at this fix is not in full or even in large part a really valid point, because there is a big discrepancy in flight times being made good by the airlines.

Mr. PRESTON. You have got a communications station at Daggett. How far is Daggett from Millis Air Force Base? Captain Keyes, how far is it?

Captain KEYES. Approximately 200 miles.

Mr. PRESTON. Well, approximately 200 miles. You can pretty well be sure he is going to arrive within 2 or 3 minutes of a schedule if he is on time at Daggett; so it seems to me as a nontechnical, nonflying layman that you must take into account the passage of one aircraft through a given area at the time that a request is made by the higher flying jet aircraft for penetration.

Mr. GREENWAY. May I comment on that?

Mr. PRESTON. Certainly.

Mr. GREENWAY. The scheduled air carriers who may report to air traffic control in good weather under visual flight rules probably represent only a portion of the traffic moving through that airway, perhaps on that airway at that time.

There may be X number of business aircraft and jet aircraft who are flying through visual flight rules conditions and have not filed flight plans and who do not necessarily report in to these fixes that we are talking about.

So it is possible that a little information in this case might be dangerous.

Mr. PRESTON. I will ask you this question, Mr. Greenway: If a twin-engine aircraft takes off at Los Angeles bound for Denver, Colo., under visual flight rules, will he report to the communications stations en route although he is flying visual flight rules?

Mr. GREENWAY. This is a carrier that you are talking about?

Mr. PRESTON. Any aircraft, itinerant aircraft.

Mr. GREENWAY. No, sir.

Mr. PRESTON. He filed a flight plan before he left?

Mr. GREENWAY. If he files a flight plan—this is through visual flight rule conditions; he may or may not file a flight plan.

If he filed a flight plan, he might be flying on visual flight rules, but if he is flying under IFR conditions, he would have to file that plan. If his IFR plan included the VFR conditions, he would still be making a report. The only time the aircraft would not be making a report is if he filed a VFR flight plan.

Mr. PRESTON. He would make no report between his destination after takeoff?

Mr. GREENWAY. The requirement for a flight plan between one point and another point in the United States is to report once every hour.

One further point, Mr. Chairman.

Colonel LIGHTNER. Mr. Chairman, if I may correct that statement. This is military aircraft only. If this civil aircraft is what you were referring to, I will have to ask CAB about that reporting on a VFR flight plan in the United States.

Mr. BAKKE. In the case of filing a VFR flight plan or in the case that no plan is filed at all, the making of a report is entirely optional. It is generally not done.

Mr. PRESTON. Do you consider it would be helpful if all were required to make reports?

Mr. BAKKE. No, sir. Not at the moment.

Mr. THOMAS. Why not?

Mr. BAKKE. Because we know of no effective use that can be made of all this information.

Mr. PRESTON. Then it brings us back to the question again to a jet penetration which is being made safely over any airway.

POSSIBLE SOLUTIONS TO AIR-TRAFFIC HAZARDS

Colonel LIGHTNER. In discussing this with the Civil Aeronautics Administration and with the Airways Modernization Board and the Navy, we offered several possible solutions to this particular situation. I think these solutions are solutions which can be approached jointly by our agencies to cure them. There is not any one single answer.

Mr. PRESTON. We are interested in the solutions that you have proposed.

Colonel LIGHTNER. Well, sir, I may offer that one way is to provide nonradar advisories, the type of thing that you are apparently suggesting here, making known to the control agencies, whether it is an approach control facility, whether it is an en route facility, or whatever it is, advisories of other aircraft known to be in the vicinity, or their estimated times, give their fixes, so that this information can be passed on to other aircraft that would be involved in the same airspace.

Another way is to require all penetrations to be on an IFR clearance basis, whether they are in VFR weather conditions or not. This is only a partial solution to the problem because on this all aircraft in the same airspace involved in the penetration are also on IFR flights; there is no protection afforded completely to the aircraft involved.

However, it would help the situation to some extent.

One way would be to use block altitudes. In other words, those altitudes at which jet penetrations were taking place that involved airways—and, incidentally, I might say at this point that I ran a check on the fourth region of the Civil Aeronautics Administration, which is practically the whole west coast to the Rocky Mountains, and all but 11 Air Force bases are involved in airways penetration. All but 11, and there are 79 Air Force bases involved.

Going back, though, to the use of block altitudes, this would mean going back to IFR conditions. It might be possible then to block certain altitudes for use by the penetration at given times, so they

could be used by the Air Force or by the Navy and not to clear en route traffic at those altitudes as those.

It is really a matter of how you regulate the use of the airspace.

It would be possible to provide radar monitoring of all approaches. This would mean that all VFR approaches, as well as IFR approaches, would be noted. Again, this means a big investment in equipment and personnel to do this.

It means basically that we now depart from the basic allocation of radar geared to provide this whether conditions at airports and airbases which warrant it, because of weather, regardless of whether the air around them is good or bad, and then go to the requirement that we require this radar and the VFR conditions, regardless of what the weather conditions are that prevail in the area.

For instance, Nellis is at Las Vegas and is an extremely good weather airport. The good weather exists there throughout the year—the Air Force has never seen to fit to place an extensive radar approach control unit there. It may be that we would have to depart from this as a basic requirement for air control—weather factor, that is.

Mr. PRESTON. At that point, Colonel, let me ask you this question: If you had had a radar installation at Nellis Air Force Base and it was properly operated, and a request had come from a pilot to make a penetration, your controller could have immediately determined whether there was 1, 2, 3, or 4 aircraft in that general area where that penetration would be made; could he not?

Colonel LIGHTNER. There are limitations to the present radar equipment, due to the altitudes that are involved.

We need some improved radar in terms of altitude coverage, in terms of use of beacon or IFF equipment, the radar transponder, things of this nature, before we can really cover the airspace adequately.

RANGE OF RADAR

Mr. PRESTON. What is the penetration of our present long-range radar in terms of altitudes? How far is it efficient?

Colonel LIGHTNER. It is efficient today—our ground type of approach-control radar employed by the Air Force is efficient only to altitudes of somewhere in the neighborhood of 11,000 and 12,000 feet. This is to skin paint aircraft without the use of radar transponders, but when the radar transponders are—and incidentally the Air Force aircraft-type equipment and our equipment with the IFF-type equipment—with the use of this equipment, radar can detect aircraft at a much higher altitude.

Mr. PRESTON. How high?

Colonel LIGHTNER. 20,000 feet reasonably.

Mr. PRESTON. That is not our best radar. We have developed something better. We have a long-range radar that is good for 120 miles horizontally but not up?

Colonel LIGHTNER. Yes.

Mr. PRESTON. Now, does the commercial radar have the radar transponder?

Colonel LIGHTNER. I will have to defer to the Civil Aeronautics Administration on that, sir.

Mr. PRESTON. Mr. Pyle.

Mr. PYLE. What was the question?

Mr. PRESTON. Does the commercial aircraft have radar transponders?

Mr. PYLE. No, sir, they do not. We are working on a program with that—and perhaps General Quesada would like to comment on this—under the sponsorship of the national modernization airways program.

General QUESADA. At the time the aircraft do not have transponders, but we are in the process of developing a transponder that is adequate and economic, and we have five separate programs to do this.

Mr. PRESTON. Let us see if we agree on this: If commercial aircraft have a proper transponder they can be detected at 20,000 feet from the ground safely and accurately; can they not?

General QUESADA. Yes, sir. Or even higher.

Mr. PRESTON. The average four-engine aircraft travels at what height?

General QUESADA. From 20,000 to 25,000 feet. You are speaking of average maximum—20,000 to 25,000.

Mr. ROTHSCHILD. These are peacetime aircraft.

Mr. PRESTON. It seems then that there would be a method whereby the presence of aircraft except in the type aircraft who do not have this could be detected if we had the equipment.

Off the record.

(Discussion off the record.)

Mr. PYLE. For the record, I want to correct the record.

There are some experimental transponders now installed on some of the equipment. However, they are strictly experimental, and the Airways Modernization Board is trying to test them. They are all working as a team to get going with this program as fast as possible, so my statement was not entirely correct.

CONTEMPLATED CHANGES OF MILITARY AIRCRAFT PROCEDURES

Mr. PRESTON. Mr. Greenway, what changes of military procedure for military aircraft over airways is now contemplated as a result of these recent accidents?

Mr. GREENWAY. At the moment, as of this particular moment, I am unable to answer that question. We will have to study this question and find out if different procedures will to the best of our ability work, we must work early new procedures. I certainly hope they will correct dangerous conditions which we find.

We point out one thing, sir: We are in a very difficult position on this because we are built around. We might establish a training base today, and tomorrow it might be surrounded by a lot of homes. Take, for example, the situation at Mitchell Field. Mitchell Field was built out in a hayfield and it was completely isolated at that time. Today Mitchell Field is completely surrounded by houses for miles around. The same thing is true in many other airbases. We have this continually.

Naturally, in trying to pick a spot to place a particular air force, they are going to naturally get as far away in the country as you possibly can, away from civil airways and away from big cities, but as I say, we are being built up around.

Mr. PRESTON. Mr. Greenway, you are not under any CAB regulations specifically designed for military operations except those that apply to civil or commercial aviation and private aviation, are you?

Mr. GREENWAY. Yes, sir. We are. We cannot go anywhere in the United States and perform any type of flying. We are controlled to some extent by regulations.

Mr. PRESTON. I understood the testimony this morning from the CAB was there were no such regulations governing the military, that the same rules applied to the military as applied to the civil.

Mr. BAKKE. Yes, sir, but I understood Mr. Greenway's answer to be the same way. They made their own regulations, and they do use some of the CAB regulations, and are subject to some of them.

LACK OF CAB REGULATIONS SPECIFICALLY FOR JET AIRCRAFT

Mr. PRESTON. Jet aircraft have been flying for some time, and during World War II in the military services, and even before and there have been no regulations written to apply specifically to jet aircraft by the CAB, have they?

Mr. BAKKE. No, sir. There have been no specific regulations for jet aircraft. There have been certain regulations, however, in part 60, which naturally apply principally to jet aircraft such as, for instance, the imposition of the 2,000-foot vertical separation between aircraft at higher altitudes. This particular regulation was inspired by the errors of systems of aircraft altimetry at high altitudes. It so happens that most all of the aircraft at those high altitudes are jet aircraft, but it was not written just for the jet aircraft. I was the alimetry. To answer your question specifically there are no regulations directed at jet aircraft as such, but there are some applicable by reason of the environment or way they operate.

Mr. GREENWAY. Mr. Chairman, can Colonel Lightner comment on that, please?

Mr. PRESTON. Surely, we would be glad to have your comment, Colonel Lightner.

Colonel LIGHTNER. I would like to point out that there are longstanding Air Force regulations and in AFR60–16, the latest edition of which is dated—I find I do not have the date, but I will insert it in the record later, but this is the standard policy that has existed in the Air Force for manyy ears, except where this regulation contains more stringent requirements.

Part 60, Civil Air Regulations governs the operation of Air Force aircraft within the continental United States and the United States Territories and possessions. Commanders of major air commands and overseas areas may authorize deviations from these regulations to the extent necessary to accomplish an assigned mission and to conform with air traffic rules in their particular command area.

Procedures: Such notices and instructions contained in the radar facilities, charts, supplementary flight information documents, and NOTAMS are directive upon all pilots flying Air Force aircraft as far as the United States is concerned. The rules and regulations promulgated by the Civil Aeronautics Board, specifically part 60, are directive upon Air Force pilots and govern our flight operations.

I might carry this regulation one paragraph further: That which pertains to pilots flying in the air traffic control system.

Pilots will comply with air traffic control procedures until an emergency makes a deviation necessary in the interests of safety. In such a case air traffic control will be notified of the intended act or action taken as soon as possible. When deviation from the assigned flight pattern is necessary as a result of severe turbulence air traffic control will be advised of the circumstances as soon as possible. The pilot operating under IFR may notify air traffic control that he

is canceling his IFR flight plan and proceeding on, provided that he is operating and can proceed in VFR weather conditions when he takes such action.

Mr. PRESTON. Colonel, you are a flier, you are a pilot.

Colonel LIGHTNER. Yes, sir.

DEFICIENCY IN NAVIGATIONAL FACILITIES

Mr. PRESTON. Have you been exposed to any grave danger, or have you been handicapped for the lack of navigational facilities, as to devices during recent years?

Colonel LIGHTNER. I think it is a well-known fact, sir, that we have not had all that could be had for purposes of navigation. Yes, sir.

Mr. PRESTON. Are you speaking now of the military aircraft?

Colonel LIGHTNER. I am speaking of the military aircraft and the system environment.

Mr. PRESTON. What deficiency in the system environment are you referring to?

Colonel LIGHTNER. I believe primarily it has to do with the capacity of the system to handle the volume of IFR traffic that it desires to operate in the system.

In other words, the system just does not have or has not had the capacity to handle the volume to the satisfaction of everyone.

Mr. PRESTON. Then you base it on the system rather than the equipment?

Colonel LIGHTNER. Equipment is an integral part of the system capacity.

Mr. PRESTON. Is it a system or procedure?

Colonel LIGHTNER. It is both, sir.

Mr. PRESTON. What has been lacking in procedure?

Colonel LIGHTNER. As far as the Air Force is concerned, proceduralwise, we have had requirements in the operation of jet aircraft specifically that have not been supported by the rules and regulations that would provide the basis for procedures that have been upped to the advanced state of the aircraft that we have had, and in this respect the designation of the high altitude control area, that which the Civil Aeronautics Board referred to as control airspace, above 20,000 feet, and the route structure that has been designated is important, but all aircraft operating in this airspace, that is a first big step toward meeting some of the high-altitude requirements of the Air Force.

Mr. PRESTON. There is no difficulty existing today in aviation from the standpoint of accurate navigation, is there, Colonel?

Colonel LIGHTNER. I believe we have sufficiently accurate navigational aids—speaking of our short-range navigation system—in being or programed in being.

Mr. PRESTON. And appropriated for?

Colonel LIGHTNER. This I am not sure of.

Mr. PRESTON. There will never be complete air safety as long as aircraft are held in space by engines and air will there, Colonel?

Colonel LIGHTNER. I believe that is a fair statement, sir.

LONG-RANGE RADAR UNDER FEDERAL AIRWAY PLAN, 1959–63

Mr. PRESTON. Mr. Pyle. in your book Federal Airway Plan, Fiscal Years 1959 through 1963, on page 19 you define long-range radar.

Under "function" paragraph B, you say this will provide coverage of all airspace above 15,000 feet for the expeditious handling of aircraft on direct civil-airway routes.

What does that mean?

Mr. PYLE. Mr. Chairman, if I might, I would like a moment's delay to answer that because I think I can answer it more fully than he can.

Mr. Chairman, In the Federal airways plan provision for the long-range radar coverage which would cover above 15,000 feet for the higher space—we would get some coverage below that altitude due to the fact that radar is being located on the ground and extends upward in a cone from each site on the ground, but that will overlap at 15,000 feet.

We would hope at that time we could see the aircraft which were traveling above that altitude within the continental limits of the United States, regardless of the pattern over which they were operating.

Mr. PRESTON. Up to how far?

Mr. PYLE. The AR—SR is radar, the one we are now buying, which is a different radar than the approach-control radar described by Colonel Lightner.

We will hope to see the large aircraft to about 40,000 feet. We would not see small jet aircraft at those altitudes. The small jet aircraft is the hardest to see due to the stainless steel and the small size, the small funnel areas. The radar gets a very small area to paint.

Mr. PRESTON. How far would you see the jet aircraft if it had a radar transponder?

Mr. PYLE. There is a limit on line of view because we are not distinguishing what might be a reflection back on the scan of the radar and pickup. We get about a millionth of it but it has its own transmission and with a much stronger burst of energy, then we will not be quite so limited in our view.

Mr. PRESTON. Mr. Thomas, you are an expert in this field and the committee recognizes you as such.

I want to ask you this question: Is there in existence today any electronic equipment or any other kind of equipment that would make a material contribution to the safety that is not being used?

Mr. D. D. THOMAS. I know of none that is not under study by R. and D.

Mr. PRESTON. Repeat that, please.

Mr. D. D. THOMAS. I say I know of no device which is not being proposed by the Federal Airways plan or being studied under the Airway Modernization Board.

Mr. THOMAS. You could have gone on an added 15 years and it would have been as definite.

Mr. PRESTON. It appears to me it is pretty definite.

Mr. YATES. There is one thing. It is not in sufficient quantity.

Mr. THOMAS. You say either in existence or under study. What does that mean? You could have added 15 years and you could have been about as definite.

Mr. D. D. THOMAS. Could I explain that?

Mr. THOMAS. Certainly. You can do anything you want to in here.

Mr. D. D. THOMAS. All right. Thank you. I know of no large device that is not pretty well known that we don't have under procurement or under active development in the Airways Modernization Board.

Mr. THOMAS. What we are concerned with is what we have now.

Mr. D. D. THOMAS. We have radar now, we have communications, we have personnel now. Those are the three backbones of our system.

Mr. THOMAS. Do you have radar going in excess of 20,000 feet up?

Mr. D. D. THOMAS. Yes, sir, going into the system for large aircraft but not for jets.

Mr. YATES. I have been told that it is possible for an aircraft to fly at an altitude of 1,000 feet and not be detected by any radar. Is that correct?

Mr. D. D. THOMAS. I would not like to answer that, and I will tell you why. We are now talking about the defense capacity of this country.

Mr. THOMAS. We have no air traffic control which covers the Mexican border.

Mr. D. D. THOMAS. I would not like to comment on it.

Mr. ROONEY. Can it not cover as little as 500 feet?

Mr. D. D. THOMAS. Mr. Rooney, radar is line of sight and it starts at the ground in an antenna and goes up like an inverted cone and then all coverage is dependent on distance away from the radar and particularly distance from the radar.

Mr. ROONEY. Your answer then is that aircraft at 500 feet which would come within the scope of the radar would show up on the radar?

Mr. D. D. THOMAS. Yes, sir.

Mr. ROONEY. Thank you.

Mr. PRESTON. Thank you, Mr. Thomas.

Mr. Pyle, you have heard the comments of the Air Force, and I am sure you have formed some opinions and impressions here today, and we would like to hear them. The committee would be glad to hear from you at this point on a general nature or anything specific which you would like to offer as to what the solution may be in order to prevent the occurrence of accidents such as happened in Las Vegas, in California, and Texas, and other places between military and civilian aircraft.

I would like to point out at this time that in the interest of concluding the hearing by 5 o'clock today if possible, that I would like to hear General Quesada at 3:30, unless you rule out this program, and then we will have time to hear Mr. Rothschild.

Mr. Rothschild, do you have something that you plan to offer?

Mr. ROTHSCHILD. I would just like to be heard for a couple of minutes, Mr. Chairman.

Mr. PRESTON. If you two could work that out. If you want to precede Mr. Pyle we will hear you at this point.

Mr. ROTHSCHILD. Thank you, sir.

COOPERATION BETWEEN MILITARY AND CIVIL AIR CONTROL AGENCIES

Mr. Charman, I would just like to say that some other witnesses have spoken in terms of cooperation, and it has been my experience that the measure of cooperation by and between the Civil Aeronautics Board and the military and the Civil Aeronautics Adminstration

and the Airways Modernization Board that exists today is better than has ever previously existed.

I think things are working better than they have ever worked before.

Mr. THOMAS. Have you ever seen more accidents than we are having today?

Mr. ROTHSCHILD. The record for 1956 was the best in history.

Mr. THOMAS. We have had 2 in the last 2 weeks. What is best about that?

Mr. ROTHSCHILD. I hope to come to that.

Mr. THOMAS. All right.

Mr. ROTHSCHILD. This cooperation has been made possible largely because of the understanding of this committee, Mr. Chairman. Your committee has gone into these matters with great care, and the result of that great care has been that as far as the Department of Commerce is concerned, you have supplied us with moneys which have been asked for and which we will continue to ask for, and as you point out, this has been at a very rapidly growing rate.

We were before you just a few days ago, and at that time told you and the committee that we would be returning shortly and ask for an additional amount of money, and I am sure that if we justify it as we have other expenditures that we will receive the same thorough consideration from the committee that we have in the past.

We are all concerned with these accidents we have been suffering, and the way to eliminate them; and as you point out, Mr. Chairman, if we were 20 or 25 years further down the road, it may be we would have had the opportunity to get almost unlimited amounts of money, and the time necessary to use that money, we would still be faced with the possibility of some accident in the matter of air traffic, but we find that in other types of travel and occupations.

I seem to think that bathtubs have been in use for a long time, and people still drown in bathtubs; and ladders have been in use for a long time, and Admiral Burke fell off a ladder the other day.

Your comment that we will never have complete safety is true. We will approach it and have been approaching it over a period of years, and will continue to approach it. Even taking into account the tremendous growth in this field—and this has been one of the fields in which there has been greater growth than almost any other—the program to eliminate accidents is a continuation of the programs that are behind us.

Others have said that it entails manpower, equipment, and money. I would like to add to that that it also entails procedures and experience and time.

I feel sure that if we go along, and as we get the sympathetic consideration from this committeee, that we will be able to develop as we have in the past all of the elements which are necessary to do this; but we must all recognize that at no time are we ever going to reach that utopia, which is perfection. Thank you.

Mr. PRESTON. Thank you, Mr. Secretary.

Now, Mr. Pyle, will you proceed.

Mr. PYLE. Mr. Chairman, I would like to supplement what Mr. Rothschild has said.

Mr. PRESTON. Let us not deal with generalities today.

Mr. PYLE. It will be specific.

Mr. PRESTON. Go ahead.

DISCUSSION OF FUTURE PROGRAM AND PROBLEM INVOLVED

Mr. PYLE. I would like to point out that this program, which I think seems to fall into two elements of time, which I must point out: the first is the immediate one, of sitting down and continuing the processing or preparation of a more intensive process of examining each one of these base facilities involving high-speed military aircraft, both Air Force and Navy, and being sure that we have plugged every loophole that we can think of and in this procedure that was started yesterday we spent the whole day going over these points, and Colonel Lightner brought out the points that were thrashed out in a meeting that we propose to follow in a joint civil-military attempt to plug these loopholes that may exist.

It is a piece-by-piece, backbreaking job, but we will get at them, and I can assure you we will get the full cooperation of the military.

This is the first phase. The second phase is a longer one. It embraces the Federal airways plan, which has been discussed with you, and I do not think there is any need to dwell further on this and the other is the effort which General Quesada's committee has expended, and with the support he needs on his Airways Modernization Board in research and development for any techniques and procedures which will be cleared into the system as soon as they become available.

With that I think we have done everything we can possibly do to eliminate these unfortunate accidents; but I think we would be less than realistic if we were not being continually exposed to this, and we must continue working to plug these loopholes, and I can assure you it is going along satisfactorily.

Mr. PRESTON. But, Mr. Pyle, can we bring about a system eventually of positive control without imposing serious limitations upon aircraft operation?

Mr. PYLE. This is our objective, Mr. Chairman; but I think the time factor—and that seems to be realistic to me—is important.

It cannot be done overnight. Expenditure of money is not the only thing. The training of the personnel and the development of the proper procedures that are entailed, and it also contemplates something that we might overlook, the communications capacity of the aircraft itself. This is a safety program, and as we change our systems this requires the spending of a tremendous amount of money involved for the procurement of equipment for the use of the pilots.

IMPROVEMENT IN QUALITY OF SYSTEM OF AIR COMMUNICATION

Mr. PRESTON. Mr. Pyle, speaking of communications, has there been any real improvement in the system of communication between the pilot and the tower as to quality of delivery, improvement of the use of frequencies in recent years?

Mr. PYLE. Yes, sir; there has been dramatic improvement in this in recent years.

Mr. PRESTON. How is it that we still have garbled messages between a pilot and control tower?

Mr. PYLE. This is a matter of maintenance, but I would say that that is our maintenance rather than research. However, like in that one radio, you will have trouble from that ship to the control tower. However, the use of frequencies that we have developed, the program

with which you are familiar on this committee—all these factors have increased our ability to communicate more rapidly and more satisfactorily with the pilots, be they civil or military.

Mr. PRESTON. Now, Mr. Pyle, specifically with reference to the accident at Las Vegas. It has been established that both aircraft were operating within the limits of their authority.

Mr. PYLE. That is correct.

POSSIBILITY OF PROCEDURE OR DEVICE THAT WOULD HAVE PREVENTED LAS VEGAS ACCIDENT

Mr. PRESTON. Is there any established procedure or any device that had it been in existence in that area that would have prevented this accident, and this is a yes-or-no answer.

Mr. PYLE. Mr. Chairman, the answer is "Yes," but I must qualify it because I think that if I say "Yes"——

Mr. PRESTON. I am going to have you qualify it if you say "Yes."

Mr. PYLE. Mr. Chairman, the answer is "Yes." There are devices that could have prevented this accident.

Mr. PRESTON. What are those?

Mr. PYLE. There is the use of radar.

Mr. PRESTON. What kind of radar?

Mr. PYLE. Long-range and short-range radar. The point that I make, Mr. Chairman, before we go into space, each one of the various items that are available, I must point out they are required to be put in, they require men to operate them; they require procedures under which they operate; they require the training of these personnel.

There are so many factors involved, and honestly, I answer you "yes," but I immediately qualify myself out, so I think the other way of looking at it would be to say that the answer is "No."

That is not being very helpful, but that is being specific.

Mr. PRESTON. Mr. Pyle, your function is to establish devices and equipment for civil aircraft which is used, of course, by the military. Had you had on the ground all the radar known to exist today of every kind and character today, would it have prevented this accident, because you were not consulted about the jet aircraft making the penetration, were you?

Mr. PYLE. The answer is "yes." It would not have made any difference. This is where you get into the procedural problem.

Mr. PRESTON. Yes, sir; that is what I want to emphasize: that this hearing today is more and more presented with the importance of new procedures and additional equipment, but perhaps more important is new procedures rather than additional equipment.

Mr. PYLE. Mr. Chairman, if I could agree further with you in this respect, this is the area that seems to me that we must with renewed vigor look at, as I pointed out as the first phase of our approach to this program, and that was a joint civil-military effort that must go forward at an accelerated and even more intensive pace than we have been following already.

Mr. ROONEY. Mr. Chairman, I think our distinguished administrator has given you an awfully clear-cut statement. Are we going to have General Quesada, and that rather handsome young gentleman

from the Pilots Association? Are we going to have time to hear them this afternoon?

Mr. PRESTON. We would like to. As far as I am concerned, I would like for General Quesada to be heard first. You are Capt. Louis A. Abel?

Captain ABEL. Yes, sir.

Mr. PRESTON. Very well, Mr. Abel, we would like to have such observation of the cause in connection with these accidents that you think would be pertinent to this matter as it is under discussion.

Mr. Bow. Mr. Chairman, before he proceeds, could he identify himself?

STATEMENT OF CAPTAIN LOUIS ABEL, AIRLINE PILOTS ASSOCIATION

Captain ABEL. Capt. Louis Abel, representing the Airline Pilots Association. I am an active airline pilot, flying a full month's schedule on Capital Airlines, and serving on the Washington airspace panel, and the Air Coordinating Committee, which is the group which allocates the airspace over our air safety from the Washington area.

I am a member of the Airline Pilots Association's air traffic control committee, and many, many air safety associations.

The Airline Pilots Association participates in much air safety work without remuneration. He flies a full month's schedule and does this work in his spare time. Probably the one thing which concerns us most is the midair collision which you gentlemen are considering here today.

I would like to comment too on some of the questions here asked this morning. I think they are certainly to the point considering the fact that you are more or less a layman in the field of aviation, and the chairman, I believe, in your opening statement, sir, indicated that rather than getting down to specific points on this particular accident you would like to delve into the amount of cooperation existing between the civil and the military traffic control agencies.

NEED FOR POSITIVE TRAFFIC CONTROL FROM THE GROUND

I believe the first key to this entire dilemma, of course, is, as Mr. Durfee stated earlier positive traffic control from the ground. This is a gigantic task certainly and was begun anywhere from 10 to 15 years too late. ALPA only complains that the pace of the progress we are making today has not gone faster.

It has been pointed out that to attain this control, we need money, and I am not qualified to say whether we have enough money appropriated or not. Sometimes we think it is responsible for solving this dilemma and spending it on some of the wrong things or not spending it fast enough, but I will pass that for the moment.

LACK OF PROPER PROCEDURE AND TECHNIQUES

People and machinery—but the thing that seems to be lacking in most of the testimony this morning is the procedure and the technique. It has been indicated that if we had all the money and the people and the machinery necessary we still do not have the necessary know-how as far as procedures and techniques to apply this thing.

ALPA disagrees a little bit on this point. We feel that with present-day knowledge and techniques and people and machinery which is already in operation and on the shelf, we can do a much better job than we are doing today and do it a little faster.

I have no quarrel with General Quesada's Air Modernization Board. Certainly we cannot quarrel with research and development per se. The only trouble is that the only indication of help that we get from General Quesada is that he is working on problems and hoping to have a solution in several years from now, and I am faced with taking that airplane out into the air tomorrow morning.

GOLDEN TRIANGLE PROCEDURES

ALPA feels that in many cases it is really forcing the traffic control agencies under the CAA and the CAA air traffic control—merely forcing them to do this job that they will ultimately learn how to handle it, and we attempted to do this. July 1 of last year, the Airline Pilots Association was instrumental in initiating what we call the golden triangle procedures.

Pilots for years have desired this positive control from the ground, and we did not seem to be getting along fast enough, so on June 1 of last year the Airline Pilots Association in cooperation with the airport agents set up what we call the golden triangle, which encompasses the triangle from Washington to New York and west to Chicago.

We decided from that date on in airline operations all airline aircraft flying above 9,500 feet in this area would file instrument flight plans or, in other words, comply with the flight rules.

Many people, including some of our own pilots, thought this would break down the control system. It has not worked that way, and I think by forcing CAA to control us in this way, I think we have taught them how to control us in this way.

Our ultimate goal is to lower this below 9,500 feet. We have a program in the mill in our organization awaiting approval of our board of directors to increase the size of this golden triangle to encompass the area from Boston to Key West and out to Chicago, and everything within that triangle, and another big chunk of space on the west coast.

Along with this feeling that we do have, we feel that with the use of present-day techniques we can certainly go much further than we have toward solving this and that a big factor in this would be to have one single agency controlling all this traffic.

I believe one of the important facts is that the law vests the Civil Aeronautics Administrator with the responsibility to control this traffic; and if the traffic out of Nellis Air Force Base had been under one single control, it would have eliminated some of the difficulties of coordination and communication between the civil traffic control agency and the tower control of the VFR controller unit at Nellis Air Force Base.

NEED FOR EFFICIENT USE OF AIRSPACE

People today have talked about airspace being diminished, being a diminished natural resource, and this is a catch phrase that too many of us like to use.

It is a diminishing natural resource only because we have not learned to utilize it efficiently. There is still plenty of airspace out there in proportion to the number of aircraft out there.

It is diminishing though because we do not know how to use it efficiently. We are wasting it with the lack of this knowledge of how to use it efficiently—the military people are forced to compete with the operators, for this airspace, when they have a requirement and they are certainly justified in requesting what we call a restricted area to fire some of their rockets and firing from the ground in, and this inherently hazardous type of training that they do today—and it is a very important thing, and certainly they have every right to share this airspace, and we want to share it with them, but under the present method of allocating airspace, they are forced to be our competitors rather than sharing this thing with us.

When they have an activity of this sort, they request a restricted area, and these things get bigger and bigger as the speeds and the missiles get higher and higher until airspace truly is a diminishing resource.

If we could learn to control this thing, we could have true joint use of the airspace and share it. Many of these restricted areas are only used for a few hours a week or perhaps a month.

When they are not in use, we would like to be allowed to fly through there. It is a matter really of a simple telephone line being used for a call from the civil controller to the military agency with this restricted space and having the military man cooperate and call up the controller and say we are going to shoot rockets today, just as we are filing a flight plan to fly over the airway that day.

In trying to allocate airspace in the Washington air space panel, the military has a requirement for these jet penetration areas that every time they try to set up a jet penetration area, we find that it conflicts with one of our airways. It is not our airway. They use the airway also.

Conversely when we request an airway—we need a lot more of them—we find it conflicts with one of their jet penetration areas.

They like to call it a conflict, but the only reason it is called a confliction is we have not learned to effect a positive control.

If I might just sum this up by saying again that we agree money, people, machinery, are necessary, but we feel very strongly that present-day procedures and techniques are not adequate to come up with a true solution, but are such that we can proceed in a much faster way than we have been doing previously.

Gentlemen, may I call your attention to Mr. Sayen, the president of the Airline Pilots Association who has arrived and is principally representing our association.

Mr. PRESTON. You have said several things that impressed me. I want to ask you some questions about them, but I think in the interests of time, the procedure will be to wait until we have heard the witnesses and then at 10 minutes past 4 open the meeting for general questions by all members of the committee between 10 minutes past 4 and 5 o'clock.

Thank you very much for a very enlightening and interesting statement.

I think that we should, before going any further, invite Gen. Milton Arnold to make comments, if he wants to.

Mr. JENSEN. Mr. Chairman, General Arnold had to leave at the noon recess. He plans to come back. I have no statement to make for the ATA, but he may be here for the questioning.

Mr. PRESTON. Very well. Please inform him that he may testify if he so desires.

STATEMENT OF GEN. E. R. QUESADA, CHAIRMAN, AIRWAYS MODERNIZATION BOARD

I think at this point we will hear General Quesada, the Chairman of the Airways Modernization Board. General, if you would make a general statement, we will hear your general statement, and then begin going, after you have concluded, into the general questioning.

General QUESADA. Mr. Chairman, the Airways Modernization Board was formed by law of August 14. On the 19th we had a staff of 19 professionals which were borrowed from the various agencies. We received our first funds on November 5 through the medium of transfer orders.

Since then we have received a total of about a little over $15 million by the medium of transfer: 1,200,000 from the Department of Commerce, and about $14 million from the Department of Defense.

I must make it clear that the Department of Defense transferred to us—the Air Force, the Army, and the Navy—certain functions that they were performing in this area; and when they transferred the functions, they transferred the funds. That is the source of our funds.

I have taken it upon myself to say, and I am assured that the Department of Defense is not budgeting for those functions in the 1959 budget. I mention this to indicate that the Department of Commerce and the Department of Defense are contributing and have contributed to the efforts of the Airways Modernization Board.

I would like to emphasize that I am only one of the members of the Airways Modernization Board. Mr. Rothschild is one, and Mr. McIntyre of the Air Force is another. But the Board has its own professionals and its own funds.

However, we cannot operate in a vacuum, and we do not operate in a vacuum. We are really the servants of others. Our objectives in life is research and development, and I would like to read the pertinent parts of the law.

Mr. PRESTON. General, I am wondering if this is the appropriate time to do this. You are going to appear before this subcommittee to justify your appropriation request next week. Would it not be better today if you addressed yourself to the problem at hand rather than that?

General QUESADA. I was going to show you specifically what we are doing and in so doing you will receive many answers to the questions that have been asked.

Mr. PRESTON. I read your book last night, and I have seen it here today. However, to go through this we will be here until midnight.

General QUESADA. I can terminate now, Mr. Chairman.

Mr. PRESTON. No, Sir. We think you are going to give a lot of preliminary material next week, and that it would be more appropriate to give that general information next week.

General QUESADA. I was not going to defend the budget now.

Mr. PRESTON. I do not want to hamper your presentation.

General QUESADA. You are concerned with the specifics?

Mr. PRESTON. You have heard what has been going on around this table today, and we have a lot of respect for your opinion, and would you let us have your opinion of them rather than what you hope for 5 years hence.

PROGRAM FOR AUTOMATION TECHNIQUES

General QUESADA. Let me put it this way: The Airways Modernization Board is going through the present state of the art and attempting to push automation to the airlines, at the present time the management of air traffic is manual, and we hope and have many programs underway that are designed and will bring automation to this very, very complex problem of the management of air traffic.

We hope to substitute, as a single example, automation techniques for memory techniques. We hope to provide automation techniques for a system that is manual and always retaining the final decision to the controller to provide safety to the management of air traffic through that.

It is our avowed intention, Mr. Chairman, to be so efficient in the management of air traffic and be able to determine in space where aircraft are that we will be able to eliminate airways; and if we know where the targets are, which in this case are aircraft, either military or civil, and can track while scanning and can compute their speed I am convinced that we will be able to eliminate the necessity in due course, I assure you this is not to be done overnight, but must be done on an analytical and intelligent basis.

The technology if it exists today, the system will permit the tracking and scanning and tracking while scanning, and by adoption of computer techniques, we will be able to permit the better management of the air traffic.

In that respect equipment under terms of the contracts that do exist today—a data processing and display system—a model is to be delivered in 1 year that is to go into the New York area, and is to be directed in the New York area in conjunction with the CAA in order that we will have imposed upon us the most difficult problems. If we can solve the most difficult problems, we feel that surely we can solve the easier problems.

Mr. PRESTON. Do you have a prediction as to when you think this system will be developed with automation?

General QUESADA. We hope to have it ready for experimental operation in 3 years.

Mr. PRESTON. On an experimental basis?

General QUESADA. We hope to be able to move into a production prototype at the end of 3 years.

Mr. PRESTON. In the New York area?

General QUESADA. Yes, it will be in the New York area before 3 years. It will have been tested by the end of 3 years, and at that time we have planned to go into the writing of specifications and production of a useful and final model.

We have selected an experimental site in Atlantic City which we inherited from the Navy. We selected Atlantic City in order that we can have all the frustrations of real life imposed upon us. The ocean

on one side, which gives us the freedom of isolation, and congestion on the other, which gives us the frustrations of real life.

Atlantic City gives us clear weather and foggy weather, snow, sleetstorms, and all the trials and tribulations that real life airline management is faced with, plus the fact that the Navy gave us a useable plant.

USE OF AIR DEFENSE SYSTEM FOR MANAGEMENT OF AIR TRAFFIC

Another objective is to incorporate and use the air defense system of the United States to the maximum extent possible for the management of all traffic, whether civil or military. Likewise one of our objectives is to provide to the Air Defense Command information on the positioning of the aircraft, as an essential function to the air defense system of the United States.

The air defense system of the United States is dependent upon identification, and we hope and plan and have several programs underway that will give or make a major contribution to that if the air defense system can not see and identify the aircraft, knowing whether it is friendly or foe, then it is a degradation to the system.

We hope and eventually expect that even during high times of emergency, when the need for air transportation is at its height—it does not lessen during a war, it increases—we hope that it will be able to continue. It will be able to continue if we can identify the aircraft. If we cannot identify the aircraft, we cannot continue because the Air Force would have to put them on the ground.

Just to repeat myself, our objective is to bring automation to the system which is now inadequate for the demand. It is inadequate because we have not done what we are trying to do now, and should have done 10 years ago.

Mr. PRESTON. That is your major suggestion, and according to your progress report, you have many, many projects of lesser importance, do you not?

General QUESADA. Of less importance, yes.

CURRENT COLLABORATION FOR PERMIT USE OF FEDERAL AIRWAYS

Mr. PRESTON. But of contributing importance, right. But, General, what do you recommend we do today with reference to the joint use of the Federal airways by the military and commercial aircraft to prevent further accidents such as those that have occurred in recent months and they are becoming too numerous?

General QUESADA. I was a little surprised that more information was not given of the meeting that Jimmy Pyle called yesterday. I think Mr. Pyle should be given credit for that meeting. The objective was to get all those people together, and see what could be done, and the result was that all parties concerned would make a critical examination of every single area in which the conditions exist similar to those which occur in Las Vegas.

Mr. THOMAS. Was that meeting called prior to this one or after this one had already been called?

General QUESADA. I do not know. I assure you it was not influenced by it. I assure you that the people who are involved are not callous to these tragedies.

Mr. THOMAS. I was not saying that they were.

Mr. PYLE. Mr. Chairman, I think it was called on Tuesday afternoon, when we decided to get together. As a matter of fact, the point Mr. Thomas makes, that it should have been made sooner, but this accident did point out this fact, but I would point out that we have been working in the civil and the military, that we have been working to plug these loopholes, and we are going to do things here a bit more efficiently to be sure that there are no loopholes.

General QUESADA. Do you mean to continue through these other things that are being done? I repeat what I have said before, which is the quickest thing we can do, and that is what has been suggested by others and what I have said: Search out all of the ingenuity at our command to find and perfect better procedures.

REASON FOR ACCIDENTS IN NONCONGESTED AREAS

Mr. PRESTON. General, how do you account for the fact that most of these collisions between military and civil aircraft have occurred not in the most congested airspace but out in the West, where space is not crowded?

General QUESADA. The only thing I can think of is that it is in those areas where there is a lack of positive control. The clearer the weather, the greater is the absence of positive control.

Mr. PRESTON. Would you attribute that, then, to human error?

General QUESADA. Yes; I have had a great deal of experience in the management of droned airplanes, meaning uninhabited airplanes, including jets, and I can assure you that, if we had the best radar that is in existence today and with the height-finding equipment, we could not have brought these aircraft together and made them collide in midair in a thousand attempts if we tried. I assure you of that. That is, unless there was a homing device on either one.

Mr. PRESTON. Now, I inquire of the witnesses and observers here today if there is anyone else who specifically has something to offer at this time.

Mr. JENSEN. Mr. Chairman, I just tried to locate General Arnold, and I would like to make a couple of comments, since it appears that he will not be able to get here, himself.

Mr. PRESTON. Yes. Please identify yourself for the record.

STATEMENT OF WALTER H. JENSEN, AIR TRANSPORT ASSOCIATION

Mr. JENSEN. I am Walter H. Jensen. I work with the Air Transport Association. I am on special assignment from American Airlines, and I am a qualified pilot, though I do not fly while I am working with the association.

I think it is obvious that the airlines have an extreme concern over this kind of an accident, for a very obvious reason. This concern became very potent back several years ago when there was a collision between two airline carriers in the Mission City area.

This resulted in a succession, leading up since that time to the efforts that we have been making. Since then we have been directly addressing ourselves to this problem very actively. We initiated a near-miss program authority which, I think, later on had a great deal to do with the CAB's program. We did this to try and evaluate the program and arrive at the area in which solutions could be arrived at, and that is, of course, what you are addressing yourselves to today.

I think that one thing should be pointed out that maybe has not been stressed enough today during the hearings, and that is that this is a national problem, and to address ourselves to a spot check that might look at Las Vegas and might mean that that is not the right solution to this problem.

If we take that action, we might prevent another recurrence of the Las Vegas accident, or even of that particular type of collision, only it may be opening ourselves wider to the potential collisions in some other place or under certain conditions, so I think the CAA, the CAB, the military, and ourselves are right to look at the problem as a whole, and not to take it out of perspective; if you did that, it might destroy the efforts that are going on to try to attack this problem as a whole.

WAYS TO PREVENT COLLISIONS

There are only two ways to prevent collisions. One is by providing control. One is by providing separation between the aircraft from the control on the ground, and the other is by the pilots seeing the other aircraft. Those are the only two we have.

The one that has broken down is the see and be seen. I think this has led us in the airlines, along with others in the industry, to conclude that the only answer is to try and find out how we can apply controls in those areas, particularly where the see and be seen, where the VFR is not adequate.

Mr. PRESTON. In that connection, I would like to make this observation: When I saw an aircraft painted with a new type of paint, with a bright orange paint on the nose and the tail on a silver aircraft, it was immediately obvious to me that here was a new way of enabling pilots to see other aircraft.

A silver aircraft with various kinds of markings seemed to fade in with the sky, but this marking was so brilliant that it could be seen at a great distance. You could not see the center portion, but you could see those two bright orange spots in the sky.

I know that it would not be very appealing to the airlines to adopt the same color, but, nevertheless, if it is going to keep you from getting knocked out of the sky, I think it is worth doing, because I think it is a very great improvement in the see and be seen.

Mr. JENSEN. Mr. Chairman, that paint comes in many colors, and our airlines have been in negotiation with the manufacturers of that paint, which is another way of attacking this problem. Of course, there is no single solution to the problem, but this is an adjunct.

I would like to emphasize that we cannot say that this is the solution that will prevent aircraft collisions of the midair type. What we must address ourselves to is minimizing it, and this is a subject that involves action in many different sources, such as the type of paint.

That should be evaluated to find out how much it will do, how well it works, and other problems in conjunction with using the paint. We are also actively engaged in trying to improve the lighting on aircraft. The airlines have done a lot of work on this, and it is my personal feeling that it is probably safer to fly at night now than during the daytime.

I only mention these things to point out that there is no single solution. We have tried to work with all these agencies, and the only things that we have come up with as a finalized solution is come up with

an increased amount of control and decrease the amount of VFR control.

CONTROL OF OPERATIONS AND MANEUVERS UNSUITABLE FOR VFR

To be specific, the only thing that occurs to me that they might add to this discussion that I do not believe has been mentioned so far is that I think we must reexamine those flight operations and those maneuvers which are particularly unsuitable for VFR operation.

I am thinking now of the definition of acrobatics, which includes some statement about abrupt change in attitude and altitude and unusual maneuvers, and the present civil air regulations require that acrobatics be done outside of the airways.

I think we could benefit within our industry group, and this group, in trying to assess and reassess in the light of test speeds and test aircraft a more clear delineation of those maneuvers which are unacceptable for airways, and by a set of VFR regulations, and try to arrive at an affirmative solution of how those maneuvers can be carried out in a safe way.

It may well be that the meeting that was held yesterday will get into that part of the problem. If so, I think that is a very fruitful area to look at for a more immediate solution.

In summation, I think that we should not address ourselves to just finding a solution to a particular type of accident that just occurred. I think we must address ourselves to the overall midair collision problem and not expect to find any fantasy in the way of a single solution, but to start with a program that is actually already organized toward single control and still keeping in mind the very distinct problems that are involved in trying to meet that problem most rapidly.

As someone has said, it will involve almost a brand new Air Force effort as well as the commercial airlines. This is not a change that is possible overnight. Those are the only remarks that I think I care to make at this time, Mr. Chairman.

Mr. PRESTON. Thank you, Mr. Jensen.

Mr. Abel.

Captain ABEL. Mr. Chairman, I have Mr. Sayen here and I would like to have him elaborate on my remarks regarding one central authority, the advantage of having one central control agency. He is more versed in this than I am.

NEW PAINT FOR AIRCRAFT

Mr. PRESTON. Before hearing your statement, I will ask you, Mr. Durfee, have you seen this new paint?

Mr. DURFEE. I have seen it on the CAA aircraft.

Mr. PRESTON. Have you had the opportunity to observe it in the sky?

Mr. DURFEE. Yes.

Mr. PRESTON. I would like very much to have you and your staff arrange to have an aircraft fly at some distance, and even on a bright, fair day I think it is so difficult to see an aircraft—I would like very much for you to see it, but I am sure if it impressed you as much as

it did me, that you would immediately hold hearings on the advisability of having all aircraft carry markings of that type of paint.

Mr. DURFEE. I am informed, Mr. Chairman, by Mr. Bakke that the Board has an investigation on this very subject at the present time.

Mr. PRESTON. How long has it been going on, Mr. Bakke?

Mr. BAKKE. Sir, I do not know whether this is good or bad.

Mr. PRESTON. I am afraid it is going to be bad.

Mr. BAKKE. The most recent project to be established in this respect is about 2½ years old. The first time such a project was established was in 1946. The second such project was undertaken in about 1949.

Each investigation that we have undertaken with respect to recommendations such as this have been concluded on the note that generally speaking, for all operations with dark backgrounds, light backgrounds, and all kinds of visibility, in other words, all kinds of aircraft design, that the large-scale application of paints frequently detracts from the visibility and more frequently detracts than it does contribute.

The most noteworthy development in recent months that has changed that opinion is a development which is being monitored most closely if in fact not being developed by the Department of the Navy.

I think this aircraft to which you refer if it is in this area is a Navy RFD. I was not aware of the N–32 application, but I have been working with the Navy, and we are aware that this is going through a development program.

Mr. PRESTON. Let me say that is an interesting statement. We have been kicking this thing around for years, and have done nothing about it unless I am something unusual in my acuity, or my acuity is different from everybody else in the world.

It is obvious that this paint makes it stand out in the sky. How much longer will we have to study this thing before it reaches a conclusion?

Mr. DURFEE. I can assure you that we will make an immediate study to supplement whatever studies we have made. The Board will comply with whatever suggestions you have made.

Mr. PRESTON. I hope you will. It is like distinguishing black from white when you see this orange in the sky as distinguised from the silver with which most planes are painted.

I wonder if you have ever called on the pilots association to give their evaluation of this paint.

Mr. BAKKE. Many different paints, sir.

We have had a great deal of correspondence with the ALPA.

Mr. PRESTON. Have you had meetings with them and had them look at the aircraft, the people who fly them?

Mr. BAKKE. No, sir.

Mr. PRESTON. I would suggest in the interests of giving you some information for the Board that you get a committee of pilots to look at this type of paint and make their recommendation to the Board.

I think it is a tremendously important thing, especially in view of the development here today that the falling down, as Captain Jensen says, has been in the area of VFR—see-and-be-seen area.

Mr. Sayen, I would like to hear from you at this time. You have about 5 minutes.

STATEMENT OF MR. CLARENCE SAYEN, PRESIDENT, AIR LINE PILOTS ASSOCIATION, INTERNATIONAL

Mr. SAYEN. Thank you, Mr. Chairman. I will try not to take 5 minutes. I would just like to supplement the statement with two very quick points.

The first point is the pilots not only in this country, but the pilots all over the free world practically are organized in the International Federation of Pilots Association. Five years ago, they came to the decision there had to be something done on this matter, and that the only way they could do it effectively was through a formal report, or rather I should say a formal resolution of their group, that the see and be seen philosophy was obsolete as the basis for maintaining clearance between aircraft, or the promulgation of regulations designed to maintain clearance between aircraft; that this was no longer by itself adequate, and that regulations based upon the needed methods providing clearance for the aircraft and a guaranty of safety to the public were needed.

It was decided in 1953, and the second thing we have felt is that people must recognize its limitations. However, too many people are still operating on the see and be seen principle, and under regulations based on the see and be seen principle, but we know as a matter of fact that some of the collision accidents and near collision accidents are simply the fact that the people could not see each other no matter how they tried or how hard they tried.

They simply could not see each other no matter what, and not in time to avoid the accident.

The second point I would like to make is that we have for many years been very critical of the governmental structure that places the responsibility for dealing with aviation matters in this field.

It has been divided among several agencies in such a way that it was practically impossible to appraise the direct responsibility of any 1 individual or any 1 agency. This is particularly true in the period from about 1947 to 1948 to 1955 during which there was considerable lag, a very great lag in aviation facilities, private aviation development.

The airplanes both in numbers and in speed were getting ahead of the air traffic control system. The aviation airport systems which we are now using are going into a whole new system of aircraft, and this situation will be aggravated again.

During all of this period, there was no 1 agency or 1 person who could come here and say to us directly what their own responsibility was, and that they did have the facilities with which to do this job or with which to accomplish the necessary research to keep these facilities ahead of the development of this industry.

Ever since the Reorganization Act of 1940, the responsibility for the CAA has been in the Department of Commerce. The Administrator of Civil Aeronautics has no independent authority. He did prior to 1940. He does not have it now.

We created last year an Airways Modernization Board, and we need this research very badly. However, there is no guaranty that the research done by the Airways Modernization Board will ever be implemented by any of the implementing agencies.

It is an independent research agency and responsibility is not fixed as to any of the—as to whether any of this research will ever be authorized to be utilized because the research has not been placed under the Administrator.

The CAB has the responsibility for making the rules under the authority, but not the responsibility for enforcing the rules. That is in the Department of Commerce.

There has been this defect of authority, which we think is not good structure, and we have advocated consistently that the authority be fixed directly on the Administrator of Civil Aeronautics and that it be through an independent agency and that their responsibility be not only for the operation of the system but for the necessary research and development and acquisition of facilities to keep ahead of the developments in the industry.

I think that is the only good business structure, but we do not have it at the present time. In the Curtis research on this subject by General Curtis, which created the agency which is now the Airways Modernization Board, there is a recommendation that there be a single agency, and hopefully this recommendation will be adopted.

We hope that this would keep this present problem which we are discussing here today from ever developing again because this is one of the problems with which we are faced at the present time, which is an inadequate system of maintaining clearance between aircraft in flight, and there are other problems in aviation that will need solutions also.

Next should be research, and that research should be kept out in front. That is all I have to say.

STATEMENT OF MR. WILLIAM K. LAWTON, EXECUTIVE SECRETARY, NATIONAL BUSINESS AIRCRAFT ASSOCIATION

Mr. PRESTON. Thank you, Mr. Sayen. You have discussed some matters that have been of concern to me. Now for a brief statement on the question of utilization of a daylight paint. Mr. William K. Lawton will speak on this subject.

Mr. LAWTON. Thank you, Mr. Chairman. I will be brief. I appreciate the opportunity. We have been talking about mainly what the relationship of the military and the commercial airline aircraft is, of which there are approximately 1,700 in existence.

Very little mention has been made of the vast amount of others in general aviation who are not in general told though they are not operating at the time at the altitudes of 20,000 above, they are operating in the airspace.

Now these aircraft, very few of them, have any of this equipment that is needed. I heard a great deal of comment upon the use of the transponder. I beg you gentlemen's indulgence and state that even though this equipment that is being discussed will do the job for the military they will not do it for the smaller aircraft.

Also in relation to this equipment matter, it is dependent upon both the pilot and the aircraft to have instrument qualifications; otherwise, it is of no aid at all. The pilot must also be trained.

I point out that the proportion of pilots now trained for instrument licenses to the total number is very insignificant.

UTILIZATION OF DAYLIGHT PAINT

Now, as to the paint, the National Business Aircraft Association for the past 8 months has been an active sponsor of this program. It has received a wide acceptance among the private and business aircraft, and it has been commented on very favorably by the operators who were dependent on seeing these aircraft to guide them into the pattern. It has also caused considerable comment along the airways.

They say they saw the violent red streaks, even though they didn't see the fuselage of the plane going by. I think the military should have told you that they have adopted the dayglow paint. It is not the paint that the Naval Laboratory is experimenting with.

In conjunction with its widespread membership, the members of the ATA have been told about this and are favorably inclined to it. We all realize that air transportation is quite a job and that the use of dayglow paint could well interfere with their flight but their safety transcends that advertisement which they want, that distinction they want by having their planes painted differently.

I would ask permission, Mr. Chairman, to extend my remarks further in the record.

Mr. PRESTON. We would be glad for you to do that.

Thank you. At this point the general matter will be opened for questioning by members of the committee. I will ask Mr. Rooney if he has some questions.

Mr. ROONEY. No; I will pass over to Mr. Yates at this time, Mr. Chairman.

AVAILABILITY OF EQUIPMENT

Mr. YATES. I have some questions. I have been reading through this administratively restricted booklet, Federal Airway Plan, and I call your attention to page 13, the top paragraph.

What does that statement mean? Does that mean that this committee has not made sufficient funds available for the development of an overall plan?

As I remember the hearings, after I had tried to get you fellows to buy more equipment, I was finally told that you could not buy any more equipment because it was not available.

Speaking for myself, and I am sure other members of the committee, we would be glad to make funds available to buy any equipment that is needed. That is the reason I could not understand why this sort of statement appears in the Federal Airway Plan. What does it mean?

Mr. PYLE. The significance of this statement is addressed to the effort that Congress made in creating the airways modernization plan and the fact that the research and development area has not received the attention over the years past that it might have.

Now we have taken the necessary steps to do the job.

Mr. YATES. You are in business. Do you have enough funds to operate?

Mr. PYLE. Yes, sir.

Mr. YATES. You have asked for enough funds to operate properly?

Mr. PYLE. Yes, sir.

Mr. YATES. Should you have more funds than you have asked for?

Mr. PYLE. In one area, and we are coming back to you with a supplement which will fill that deficiency.

ACCELERATION OF TRAFFIC PROGRAM TO KEEP PACE WITH REQUIREMENTS

Mr. YATES. In the hearings a couple of years ago, the fiscal year 1957, as part of the justification, a statement of Maj. Gen. Kenneth P. Bergquist, Director of Operations of the Air Force, was inserted in the justifications to the effect that the CAA has done a marvelous job with the traffic in the last few years, though it has not been able to keep pace with the rapidly increasing requirements placed upon it by both military and civil aviation.

Mr. PYLE. The answer to your thought is that it is true in part and for this reason: We presented to the committee and the committee has taken action on the implementation of the Federal Airways Plan.

In other words, we are curing this deficiency now.

Mr. YATES. Are you overtaking the deficit?

Mr. PYLE. Yes, sir.

Mr. SAYEN. We have pushed many years for an acceleration of the whole program. Originally we had a 5-year program with the CAA and many people said this was too slow. It was reduced to a 3-year program, and we said this is still too slow. We think this program should move very rapidly to the point where we can have positive control of the air space, but we cannot wait for research 5 or 6 years from now.

PRESENT AVAILABILITY OF FACILITIES FOR POSITIVE CONTROL

Mr. YATES. Does that statement mean that the facilities are available at the present time for positive control in the opinion of the ALPA?

Mr. SAYEN. Yes.

Mr. YATES. Do you mean that?

Mr. SAYEN. Yes, sir.

Mr. YATES. Did you disagree with the gentleman from the Civil Aeronautics Administration?

Mr. SAYEN. I think we have to define facilities.

Mr. YATES. Maybe the disagreement—have you presented a written opposition or written comments on this plan? Have you prepared that?

Mr. SAYEN. Basically, specifically addressed to this plan, no. We have a program that we feel should be followed in traffic control that is in writing.

Mr. YATES. Were you consulted in connection with this program?

Mr. SAYEN. Yes.

Mr. YATES. And you say you prepared nothing in connection with it?

Mr. SAYEN. We made recommendations during the time that this was being done.

Mr. YATES. Were those recommendations incorporated in there?

Mr. SAYEN. Some were and some were not.

Mr. YATES. Can you furnish this committee with the recommendations that were not incorporated in it? May we have your full recommendations?

Mr. ROONEY. May I suggest you insert your full recommendations as part of your remarks?

Mr. YATES. Yes, will you extend your remarks?

Mr. PYLE. I am just wondering where this material is. This went on for a long time.

Mr. YATES. I know this committee is interested with the ALPA in doing something about this problem. We thought it was a very valuable contribution you made, and that is why I am suggesting we would be interested in receiving your comments on this plan, inasmuch as you have to fly the aircraft which we are discussing.

Mr. SAYEN. I would not be able to say, but whether we prepared any written statement in that respect I would not know, but I can find out and advise the committee.

(The information will be supplied to the committee when completed.)

Mr. YATES. Does the ATA agree with the comments made by the ALPA today?

Mr. JENSEN. I would prefer to make my own statement.

Mr. PRESTON. Time will not permit any, or will not permit me to get into a hassle between ATA and ALPA.

Mr. YATES. As I recall, the attitude of the ATA—this is only another step in the process which goes on from year to year and the same comment, which is this plan is fine as far as it goes. Obviously, we would like to see this move faster.

Mr. JENSEN. I would like to see lots of things done. As far as this plan goes, we have endorsed it.

Mr. ROONEY. May I interject 1 minute. I have been looking at this Federal airways plan, and I note that it is stamped "Administratively Restricted."

What does that mean? Who stamped this?

Mr. PYLE. That was done because we present the plan to the committee, and then after the committee has digested it and released it, then we are in a position to release it.

This is one reason why I think it is only fair to point out that Mr. Sayen has not seen this specific issue of the plan because we release this to the committee, and this is not released to other people yet.

Mr. YATES. When will it be on release from the Government Printing Office?

Mr. PYLE. Within the next 2 weeks, when the committee is finished with it.

INSTALLATION OF APPROPRIATE EQUIPMENT IN PLANES

Mr. YATES. In connection with our testimony a few years ago it was indicated that while the Government was installing DME equipment at that time, the commercial lines were not installing the commercial instruments in the planes.

You are now installing other kinds of navigational equipment—is appropriate equipment also being installed in the plane so that the commercial planes will be in a position to use your ground facilities?

Mr. ROTHSCHILD. This could not be answered categorically because some of the ground equipment will not require any.

Mr. YATES. With regard to those that do.

Mr. ROTHSCHILD. The indications given us at the time to which you refer were that if the Government could make up its mind, it would go at the implementation of that plan and proceed at a rapid rate.

I understand on new aircraft some of the airlines have provided for that.

Mr. YATES. Obviously, it would not make sense for the ground basically to do a service, and the aircraft not being able to have the aircraft to correspond to that.

NEED FOR SINGLE MANAGEMENT OF CONTROLS

Mr. SHELLEY. I would like to ask Mr. Sayen if by his remarks today or his colleague's remarks today on behalf of their association, he meant to imply that it would be beneficial if there were an amalgamation of the CAB and the CAA.

Mr. SAYEN. Not entirely, no. I was directing my remarks to this problem of air-traffic-control facilities and air-traffic-control operation. And are they all of the functions of the Civil Aeronautics Board? It has economic responsibility and regulatory responsibility, and the CAA has the enforcing responsibility.

Mr. SHELLEY. Am I correct in assuming that what you feel should be put under one tent and one head is the flight control, the flight pattern, the assignment and safety features?

Mr. SAYEN. Yes, sir. I might say on all Federal airspace.

Mr. SHELLEY. On all Federal airspace?

Mr. SAYEN. And its use, yes. The allocation of airspace, the control of airspace, and all of that type of problem.

Mr. SHELLEY. That would apply not only to commercial liners and privately owned civilian operated planes, but military also?

Mr. SAYEN. All use of airspace. They should state their requirements through 1 agency, and 1 agency should have the responsibility of fulfilling those requirements, taking into consideration everybody else's requirements.

Mr. SHELLEY. You feel that that is the gap that exists now in this situation?

Mr. SAYEN. There have been some steps taken in recent months which have helped this situation. The Civil Aeronautics Board has asserted its authority in this field, which previously was handled by the Air Coordinating Committee, with which you are probably familiar, and it has delegated this subject to the right of review of the Civil Aeronautics Administrator.

This should help somewhat in some of our airspace problems, but we think that this was a step forward, but, nevertheless, we still feel that the Administrator should be given authority over this whole business, including research facilities and the rest of it, and we know that under the act of Congress granting the Airways Modernization Board, this was amended to require that a bill should be submitted to January 1, 1959, dealing with this single-agency concept.

Mr. SHELLEY. That is all, Mr. Chairman.

Mr. PRESTON. Mr. Flood.

Mr. FLOOD. I do not want any of you people to think that if I ask you 2 or 3 questions that I have exhausted my interest in this problem. Just for the record, I want that to be clear.

There have been half a dozen affirmative statements here on subjects some of which I agree and some of which I do not agree to.

Some of you fellows have stood up here and said a lot of things, and some of the things I believe, and some of them I do not. Anyway this is a broad subject, and we are not going to be able to handle it in a couple of minutes.

ADEQUACY OF CURRENT CIVIL AERONAUTICS LAW

One thing we seem to be clear about that we did not seem to be when we started is we need law. We are not satisfied with the law as it is, at least the pilots are not.

What about ATA? How far along do you agree with the pilots that we can go?

Mr. JENSEN. I did not hear anybody except perhaps you, Mr. Flood, mention that. Now the law, as I understand it, is the civil aeronautics law of 1938.

Mr. FLOOD. Yes. Do you think the specific statute which we are discussing today is sufficient? Does the Congress need to change the law? Do we need more law?

This is not a legal committee. This is an appropriation committee. We want to know, Should we recommend any law?

Mr. JENSEN. Yes, sir; I think a law is needed, and I understood in the testimony this morning that a draft was being made which would indicate that new law.

STATUS OF ELECTRONICS DEVELOPMENT

Mr. FLOOD. I refer to the state of the art in electronics. After the Grand Canyon crackup, there was a lot of talk in the papers and everywhere, yelling here it is again and what was done about black boxes of electronics in aircraft as a warning or a sign of proximity of crashes? What is the state of the art on electronics on that?

Do you have a black box you can put in an aircraft? If you would, could you find out about that?

Mr. BAKKE. Sir, it is not precisely from the electronic aspect of it. I can say this, however, that before the accident the Board has had a great deal of concern with whether there does exist the tools, in particular the kind of tool that would warn a person that there was another aircraft approaching.

Mr. FLOOD. Is there?

Mr. BAKKE. The answer is "No"; it did not exist then, and it does not exist now.

Mr. FLOOD. Is there any chance of finding it out?

Mr. BAKKE. Yes, sir. There are several very ambitious projects underway by the manufacturers, and a very ambitious one was undertaken by, or for, the ATA. I think the answer, however, is still negative.

Mr. FLOOD. You do not do research and development in your shop?

Mr. BAKKE. No, sir.

Mr. FLOOD. Does CAB do research and development in your business?

Mr. BAKKE. No, sir.

Mr. FLOOD. Who does? Do you?

General QUESADA. We do.

Mr. FLOOD. But you are so long range.

General QUESADA. We are the shortest range possible.

Mr. FLOOD. That answer does not suit me at all. If we ran committees that way, we would never get anywhere. Your Board is just one segment of the Curtis report. The whole Curtis report wants more action and more immediate action with operations than your Board could give it; is that not true?

General QUESADA. No, that is not quite true.

Mr. FLOOD. How far away am I from the Curtis report in what I said?

General QUESADA. This is the result of one of the recommendations.

Mr. FLOOD. So you are not the whole Curtis report?

General QUESADA. No.

Mr. FLOOD. The whole Curtis report urged much more immediate contact between this whole operation than your Board is able to give them.

Mr. ROTHSCHILD. This guy can take care of it henceforward.

General QUESADA. Let me address myself to the specific question you asked with regard to the warning.

I can guarantee to you that the Board is doing as much on proximity warning as anybody can do. I would be doing a misservice if I lead you to believe that a warning device is in the immediate future.

Collins' Radio, which is a very, very fine, research and development activity, had a substantial contract to develop a proximity warning device.

Mr. FLOOD. That was after the Grand Canyon accident?

Mr. ROTHSCHILD. That was after the Grand Canyon accident, and they had the courage to pay for the research and development and then had the courage to say the approach they were using could not be effective and gave it up.

Mr. FLOOD. How much money was in that at the time they quit?

Mr. ROTHSCHILD. I think the contract was for $6 million, something of that sort.

The Aero-Jet General Co. has an infrared proximity warning device that shows some promise, but in the last couple of weeks we have become a little bit discouraged over it.

This is a very difficult undertaking. It is a research and development problem, and it is not going to be solved tomorrow.

Many people have tried and none have succeeded.

Mr. PRESTON. Time, Mr. Flood.

Mr. FLOOD. My friend said my time is up. This is a very casual effort I am making, but it is a start.

Mr. BOW. Mr. Chairman, the only comment I would make is to ask the APA and the ATA to file what remarks they might have on the Federal airways. It seems to me the military have a lot of fine men flying that have their kicks with this situation; and if the other people are going to file remarks, perhaps the Air Force would have something to file.

Mr. FLOOD. The Air Force is being pushed around.

That is what I wanted to put in because nobody is taking care of them.

Mr. PRESTON. I want to take issue with the statement made by the gentleman from Pennsylvania, Mr. Flood. Nobody has pushed the

Air Force around in this hearing today. This hearing has been conducted today in an attitude of fairness.

Mr. FLOOD. Nobody has pushed anybody around today.

Mr. PRESTON. You made the statement that the Air Force was pushed around. This hearing was called for the purpose of getting information, and the Air Force has been helpful, and ably represented by the Air Force people.

As one member of this committee, I was saying that for the record.

Mr. FLOOD. I am satisfied with what they did, but there was a lot that was not said because it was not done. I do not want the record to show that this was an adequate presentation, because it was not because of the limitation of time, and we agreed to it.

Mr. PRESTON. That is correct.

Mr. HORAN. Mr. Chairman, I think just the fact that this group of men have gotten together today following a very serious accident is in itself a step in the right direction, and I am also happy that they are being taken care of.

Mr. PRESTON. Do you yield for a question, Mr. Bow?

Mr. BOW. I want to conclude. There are some that I would like to ask, but I will not take the time. However, I would like to suggest in all seriousness that if the Air Force has any comments or reports that they also file them, and any reports especially, with the committee so that we can have the benefit of whatever reports they have made.

On this thing you are talking about, General, did the ATA go into that? Did they not make some investigation on it?

General QUESADA. They made a very, very thorough investigation on it.

Mr. BOW. I understand they spent some $2 million.

General QUESADA. I would have to yield on that. They were very constructive in their approach, however.

Mr. JENSEN. As I understood again, this is a very specialized field, and I am not the one to know the details, but there has been a great deal of effort put forth by ATA and the member airlines and this project with regard to protection devices, I am not qualified to say, but I am qualified to say in support of what General Quesada has said that more than anything else that has been said today, we are pushing the state of art in this particular project.

Mr. BOW. It would seem to me just as an observation that when there are two jets traveling at the speed of jets, that these devices would have to be pretty powerful to pick them up far enough away as far as collision is concerned.

I suppose that is the thing that is concerning you.

General QUESADA. Yes, it is. Milt Arnold, who is head of it in the association, stopped in the office a few days ago. We discussed the proximity warning the last time. Most efforts have been discouraging, and we agreed we would put added impetus to the end that we would find something, and we are going to attempt to use more of our money and accelerate some of the programs and take other critical means and ask the Air Force if they will participate with us because they have a lot of know-how in this as a result of the accident, I am sure.

Mr. BOW. I think that is all.

Mr. HORAN. I have been down in the air traffic control center quite a number of times, and it is quite a fascinating place. I understand

that airplanes that do not land in Washington are guided past the area here by the control center. Is that true?

Mr. SAYEN. Yes, sir.

Mr. HORAN. Do you anticipate then that particular facility will be improved in the future?

General QUESADA. We hope to add sophistication, if I may say so, to this process by the improvement of techniques that have been developed and related programs.

Mr. HORAN. Obviously they handle the matters manually now. One man handles one plane, as I understand, and you would do it by automation?

General QUESADA. By automation, but might I interject that has no connection with the way the CAA runs the traffic. They do a wonderful job.

In the meantime I can understand their mistakes, and I have been in the business a long, long time, and I think it is a tremendous tribute to the dedication of those who are doing the job.

Mr. HORAN. I think so, too, and any member of this committee, I think, should go down and see that. I guess they do it by main strength and awkwardness, but they do it. That is all, Mr. Chairman.

AGREEMENT BETWEEN DEPARTMENTS OF COMMERCE AND DEFENSE ON JOINT USE OF FACILITIES

Mr. PRESTON. General Quesada, will you please just for the record furnish the agreement negotiated by the AMB, the Department of Defense and the Department of Commerce referred to in your testimony previously?

General QUESADA. I just happen to have it with me.

Mr. PRESTON. Fine. Thank you very much.

(The above-mentioned report follows:)

AGREEMENT RELATING TO JOINT USE OF CERTAIN FACILITIES BY THE DEPARTMENT OF COMMERCE AND THE DEPARTMENT OF DEFENSE

It is becoming increasingly clear that there are certain basic similarities in the processes essential to an effective semiautomatic air traffic control system and a semiautomatic air defense system. Each requires (1) surveillance, (2) data processing, (3) situation display, (4) communications (ground to ground and ground to air), (5) identification, (6) operating personnel, and (7) human decision.

It is equally clear, however, that effective air traffic control and air defense systems must each normally maintain their separate identities, individual functional integrity and separate management. The management of air traffic by the Department of Commerce, an appropriate function of that Department, except for military necessities, is essential to commercial and private aviation and the Military Establishment.

It is also clear that the facilities essential to air traffic control and air defense are comprehensive, highly complex, and costly—facilities that are costly to develop, costly to produce, and costly to operate. The facilities and equipment essential to each function are, in some instances, complementary, in others duplicating, while still in others, unique to each.

The objective of this agreement is avoidance of duplicating facilities, equipment, and overlapping functions; increased capability of each function; and an air traffic control system functionally compatible with the Nation's defense facilities in peace and war.

It is mutually agreed, to this end, by the Department of Commerce and the Department of Defense that each will make its respective surveillance, data processing, situation display, communications, and identification processes and facilities mutually and fully available for the early attainment of the objective above.

It is also mutually agreed that the Airways Modernization Board will initiate and conduct a vigorous program of systems analysis, common equipment design and experimentation to define more precisely where and how this free exchange, each to the other, can be practically applied.

SINCLAIR WEEKS,
Department of Commerce.
DONALD A. QUARLES,
Department of Defense.

JANUARY 9, 1958.

Mr. PRESTON. Gentlemen, I would like to state at this time that the committee is most appreciative of the response to our invitation to all of you people to come before the committee today and give us the benefit of your experience, your judgment, on this very vital question.

It is most significant to me personally to know that the area of disagreement between all segments represented here today is rather small, but by and large there seems to be general agreement in what has to be done if we are to solve the problem.

I think it has been a most helpful hearing. I am sure that the other members of the commmittee feel as I do, that we are much more enlightened on the subject and better equipped and qualified now to deal with this problem insofar as our part of it is concerned.

We are not at all told—Mr. Durfee has a big responsibility as well as the CAA and others—but it has served a most useful purpose, and we thank you very much for your interest and for your appearance here today.

APPENDIX

(The following statement was requested on p. 26:)

STATEMENT ON AIR FORCE/CIVIL COORDINATION IN LOCATION OF JET BASE CHICAGO/MILWAUKEE AREA

CIVIL AERONAUTICS ADMINISTRATION

Regarding the question raised as to the coordination effected between the Air Force and civil interests in the location of a jet base between Chicago and Milwaukee, our records show initial informal coordination as early as the first part of 1955. Air Force informed us of a strong air defense requirement for a jet interceptor base in that area (for relocation of the ADC units at Chicago International Airport), and requested informal advance joint study of the problems. We suggested location of the base north of Milwaukee, and at other alternate sites out of Chicago/Madison/Milwaukee area, but Air Force could not find an alternate location fulfilling the air defense need.

Recognizing the air-traffic problems in that area, air-traffic-control technicians of CAA and Air Force, both at the local and Washington level, worked together to develop a plan including runway and navigation facilities location and alinement to reduce such problems to a minimum.

The Kansasville, Wis., site proposed by the Air Force was approved in the Airport Use Panel of the Air Coordinating Committee on December 22, 1955, subject to such air-traffic control and navigation-facility requirements as may be determined necessary by the Airspace Subcommittee. The Regional Airspace Subcommittee approved that site on January 19, 1956, and the AF/CAA plans for facilities for the base. The ACC Airspace Panel in meeting No. 449, March 23, 1956, approved the feasibility of the operation of a USAF Air Defense Command Base at Kansasville, Wis., provided the air-traffic control, radio aids, and airport requirements outlined in the joint AF/CAA plan were met.

This base is now under construction.

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